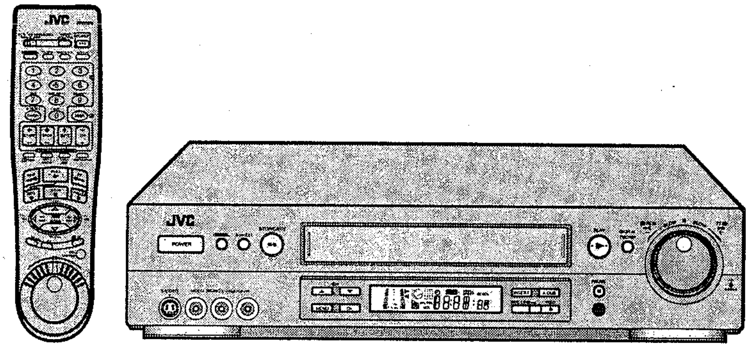
V24202

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S9600U



Hi-Fi S-VHS

VCR plus+ ® Cable Box Control
Easy Taping.

COMMERCIAL▸▸ADVANCE®
MOVIE▸▸ADVANCE™
Super VHS ET
TIME SCAN
Ghost Reduction Tuner

SPECIFICATIONS

GENERAL

Power requirement : AC 120 V∿ , 60 Hz
Power consumption
  Power on : 22 W
  Power off : 3 W
Temperature
  Operating : 5°C to 40°C (41°F to 104°F)
  Storage : –20°C to 60°C (–4°F to140°F)
Operating position : Horizontal only
Dimensions (W x H x D) : 437 x 97 x 347 mm (17-1/4" x 3-7/8" x 13-11/16")
Weight : 4.8 kg (10.6 lbs)
Format : S-VHS/VHS NTSC standard
Maximum recording time
  SP : 210 min. with ST-210 video cassette
  EP : 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system : NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/ Playback system : DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio : 45 dB
Horizontal resolution : 240 lines (VHS)
  : 400 lines (S-VHS)
Frequency range
  Normal audio : 70 Hz to 10,000 Hz
  Hi-Fi audio : 20 Hz to 20,000 Hz
Input/Output : RCA connectors (IN x 2, OUT x 1)
  : S-Video connectors (IN x 2, OUT x 1)

TUNER

Tuning system : Frequency-synthesized tuner
Channel coverage
  VHF : Channels 2–13
  UHF : Channels 14–69
  CATV : 113 Channels
RF output : Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference : Quartz
Program capacity : 1-year programmable timer/ 8 programs
Memory backup time : Approx. 10 min.

ACCESSORIES

Provided accessories : RF cable (F-type), Infrared remote control unit, "AA" battery x 2, Audio/Video Cable, S-Video cable (4-pin), Controller

Specifications shown are for SP mode unless otherwise specified. E. & O.E. Design and specifications subject to change without notice.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

●Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

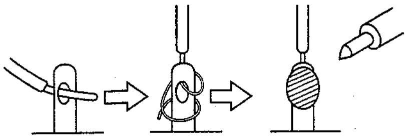


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

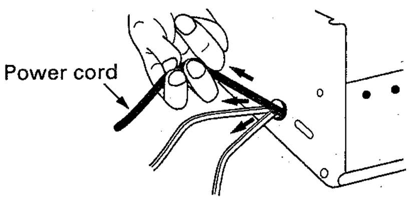


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

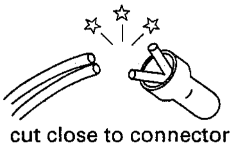


Fig.3

       (2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

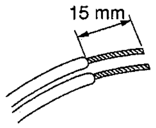


Fig.4

       (3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

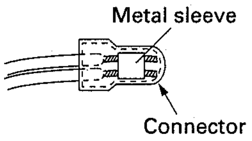


Fig.5

       (4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

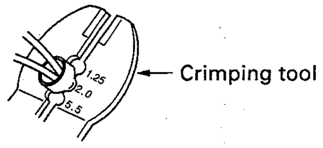


Fig.6

       (5) Check the four points noted in Fig.7.

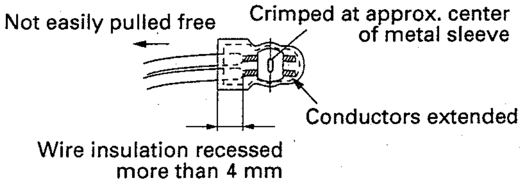

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

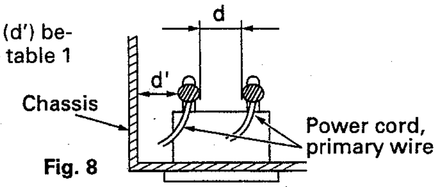


Fig. 8

4. **Leakage current test**
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method : (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

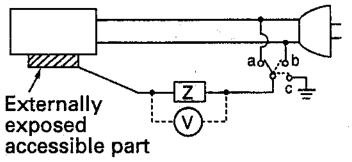


Fig. 9

5. **Grounding (Class Ⅰ model only)**
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

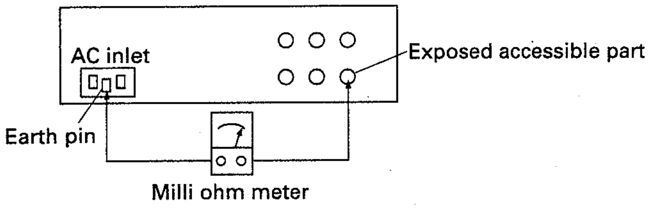


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

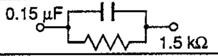
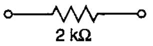
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Dear Customer,
Thank you for purchasing the JVC VHS video cassette recorder. Before use, please read the safety information and precautions contained in the following pages to ensure safe use of your new VCR.

CAUTIONS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK.
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION:
This video cassette recorder should be used with AC 120V∿, 60Hz only.
To prevent electric shocks and fire hazards, DO NOT use any other power source.

CAUTION:
TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION:
POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

CAUTION:
Changes or modifications not approved by JVC could void user's authority to operate the equipment.

Failure to heed the following precautions may result in damage to the VCR, remote control or video cassette.

1. **DO NOT place the VCR . . .**
   ... in an environment prone to extreme temperatures or humidity.
   ... in direct sunlight.
   ... in a dusty environment.
   ... in an environment where strong magnetic fields are generated.
   ... on a surface that is unstable or subject to vibration.
2. **DO NOT block the VCR's ventilation openings.**
3. **DO NOT place heavy objects on the VCR or remote control.**
4. **DO NOT place anything which might spill on top of the VCR or remote control.**
5. **AVOID violent shocks to the VCR during transport.**

**MOISTURE CONDENSATION
Moisture in the air will condense on the VCR when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the VCR's power turned on for a few hours to let the moisture dry before inserting a tape.

**ABOUT HEAD CLEANING
Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Be sure to contact your nearest JVC dealer if such troubles occur.

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The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

DSS™ is an official trademark of DIRECTV, Inc., a unit of GM Hughes Electronics. PRIMESTAR is a registered service mark of Primestar Partners, L.P. DISH Network™ is a trademark of Echostar Communications Corporation.

MOVIE ADVANCE™ and COMMERCIAL ADVANCE® are trademarks of SRT, Inc. A Jerry Iggulden invention licensed in association with Arthur D. Little Enterprises, Inc.

SVHS Energy

- Cassettes marked "S-VHS" and "VHS" can be used with this video cassette recorder. However, S-VHS recordings are possible only with cassettes marked "S-VHS".
  By using S-VHS ET it is possible to record and play back with S-VHS picture quality on VHS cassettes with this VCR.
- As an ENERGY STAR® Partner, JVC has determined that this product or product model meets the ENERGY STAR® guidelines for energy efficiency.

IMPORTANT PRODUCT SAFETY INSTRUCTIONS

Electrical energy can perform many useful functions. But improper use can result in potential electrical shock or fire hazards. This product has been engineered and manufactured to assure your personal safety. In order not to defeat the built-in safeguards, observe the following basic rules for its installation, use and servicing.

ATTENTION:
Follow and obey all warnings and instructions marked on your product and its operating instructions. For your safety, please read all the safety and operating instructions before you operate this product and keep this booklet for future reference.

INSTALLATION

1. Grounding or Polarization
(A) Your product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature.
If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
(B) Your product may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature.
If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

2. Power Sources
Operate your product only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. If your product is intended to operate from battery power, or other sources, refer to the operating instructions.

3. Overloading
Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

4. Power Cord Protection
Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

5. Ventilation
Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered.

- Do not block the openings by placing the product on a bed, sofa, rug or other similar surface.
- Do not place the product in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

6. Wall or Ceiling Mounting
The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

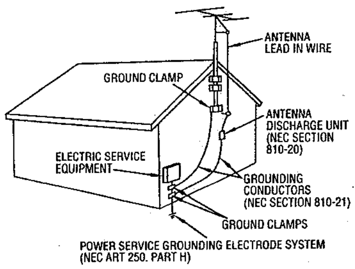
ANTENNA INSTALLATION INSTRUCTIONS

1. Outdoor Antenna Grounding
If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding connectors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

2. Lightning
For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

3. Power Lines
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE, ANSI/NFPA 70


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250. PART H)

NEC – NATIONAL ELECTRICAL CODE

USE

1. Accessories
To avoid personal injury:

- Do not place this product on an unstable cart, stand, tripod, bracket, or table. It may fall, causing serious injury to a child or adult, and serious damage to the product.
- Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the product.
- Use a mounting accessory recommended by the manufacturer and follow the manufacturer's instructions for any mounting of the product.
- Do not try to roll a cart with small casters across thresholds or deep-pile carpets.

2. Product and Cart Combination
A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

PORTABLE CART WARNING
(Symbol provided by RETAC)

3. Water and Moisture
Do not use this product near water—for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool and the like.

4. Object and Liquid Entry
Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

5. Attachments
Do not use attachments not recommended by the manufacturer of this product as they may cause hazards.

6. Cleaning
Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

7. Heat
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

SERVICING

1. Servicing
If your product is not operating correctly or exhibits a marked change in performance and you are unable to restore normal operation by following the detailed procedure in its operating instructions, do not attempt to service it yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

2. Damage Requiring Service
Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
a. When the power supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the product.
c. If the product has been exposed to rain or water.
d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
e. If the product has been dropped or damaged in any way.
f. When the product exhibits a distinct change in performance—this indicates a need for service.

3. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

4. Safety Check
Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.

HOW TO USE THIS INSTRUCTION MANUAL

- All major sections and subsections are listed in the Table Of Contents on page 5. Use this when searching for information on a specific procedure or feature.
- The Index on pages 69–72 lists frequently-used terms, and the number of the page on which they are used or explained in the manual. This section also illustrates the controls and connections on the front and rear panel, the front display panel and the remote control.
- The ☞ mark signals a reference to another page for instructions or related information.
- Operation buttons necessary for the various procedures are clearly indicated through the use of illustrations at the beginning of each major section.

BEFORE YOU INSTALL YOUR NEW VCR . . .

. . . please read the sections/literature listed below.

- "Cautions" on page 2
- "Important Product Safety Instructions" on the previous pages

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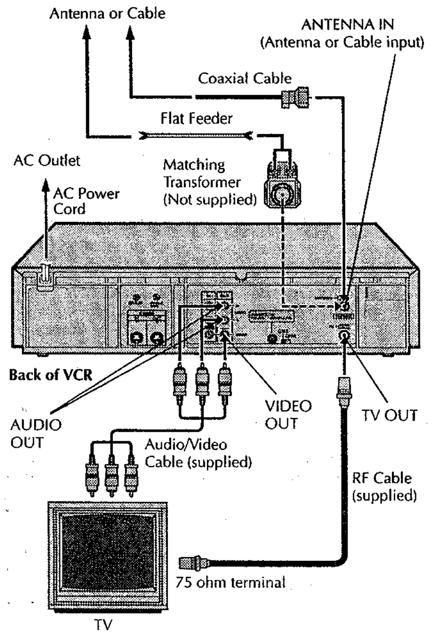
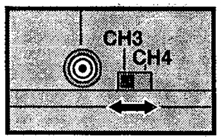
Connections


Antenna or Cable
ANTENNA IN
(Antenna or Cable input)
Coaxial Cable
Flat Feeder
AC Outlet
Matching Transformer (Not supplied)
AC Power Cord
Back of VCR
VIDEO OUT
TV OUT
AUDIO OUT
Audio/Video Cable (supplied)
RF Cable (supplied)
75 ohm terminal
TV

Back of VCR



NOTES:

- *The VCR channel is the channel on the TV which will display the audio and video signals from the VCR. The VCR's CH3-CH4 switch, on the back of the VCR, sets the VCR channel to CH3 or CH4.*
- *The CH3–CH4 switch is preset to the CH3 position.*
  Set to CH4 if CH3 is used for broadcasting in your area and set the channel on the TV to correspond to the VCR's CH3–CH4 switch setting.
- *If you have connected your VCR to the TV using the RF connector, you may need to press the TV's CH UP and then CH DOWN when switching between the TV and VCR input modes, to maintain good picture quality.*
- *Even if you are using AV cables to connect your VCR to your TV, you must also connect it using the RF cable. This will ensure that you can record one show while watching another (☞ pg. 39).*
- *For full identification of the VCR's rear panel, refer to the Index (REAR VIEW ☞ pg. 71).*

Basic Connections

1 CHECK CONTENTS

Make sure the package contains all of the accessories listed in "SPECIFICATIONS" (☞ pg. 73).

2 SITUATE VCR

Place the VCR on a stable, horizontal surface.

3 CONNECT VCR TO TV

The connection method you use depends on the type of TV you have.

RF Connection

- *To Connect To A TV With NO AV Input Terminals . . .*
  - a– Disconnect the TV antenna from the TV.
  - b– Connect the TV antenna cable to the ANTENNA IN jack on the rear of the VCR.
  - c– Connect the supplied RF cable between the TV OUT jack on the rear of the VCR and the TV's antenna terminal. Set TV on CH3 or CH4 corresponding to the CH3 – CH4 switch setting on the back of the VCR.

AV Connection

- *To Connect To A TV With AV Input Terminals . . .*
  - a– Connect the antenna, VCR and TV as shown in the illustration.
  - b– Connect an Audio/Video Cable between the AUDIO OUT and VIDEO OUT jacks on the rear of the VCR and the AV IN jacks on the TV. Set your TV in video input mode or A/V input mode. Refer to the TV Instruction Manual.

S-VIDEO Connection

- *If you have a TV with S-VIDEO input terminals, see "S-VIDEO Connection" on page 7.*

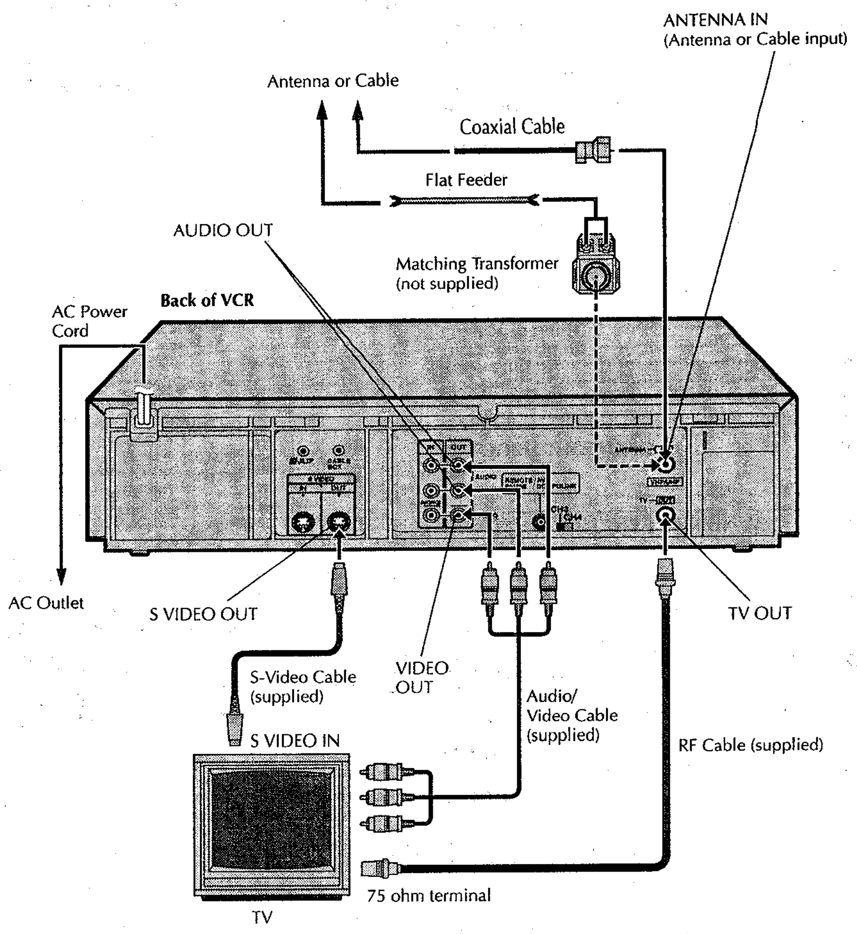
4 CONNECT VCR TO POWER SOURCE

Connect the power plug to an AC outlet.

- The clock and tuner channels will automatically be set when the antenna is connected and when the AC is first connected to the VCR (☞ pg. 8).
  (If "Auto" or "CH" is displayed on the front display panel before the VCR is powered on, the clock and tuner channels are being set automatically. Wait for the time to be displayed on the front display panel before powering on the VCR.)

5 FINAL PREPARATION FOR USE

Power on the VCR and if you have connected the VCR to the TV using the RF connector, select the VCR channel (3 or 4) by setting the switch on the rear of the VCR as shown in the illustration.
You can now perform simple playback (☞ pg. 21) or simple recording (☞ pg. 22).


ANTENNA IN
(Antenna or Cable input)
Antenna or Cable
Coaxial Cable
Flat Feeder
AUDIO OUT
Matching Transformer
(not supplied)
AC Power Cord
Back of VCR
AC Outlet
S VIDEO OUT
TV OUT
S-Video Cable (supplied)
VIDEO OUT
Audio/ Video Cable (supplied)
S VIDEO IN
RF Cable (supplied)
75 ohm terminal
TV

NOTES:

- *To make the most of the Super VHS picture performance we recommend that you use the supplied S-VIDEO cable to connect your VCR to a TV with an S-VIDEO input connector.*
- *To operate the VCR with your TV using the S-VIDEO connection, set your TV to the AV mode using the TV's remote control.*
  *You can also use the **TV/VCR** button on the VCR's remote control to set your TV to the AV mode. (☞ pg. 60)*

S-VIDEO Connection

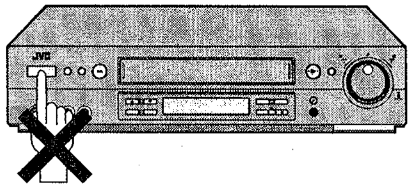
CONNECT VCR TO TV

- a– Connect both the RF cable and the AV cables to the TV as explained in step 3 of "Basic Connections" (☞ pg. 6).
- b– Connect the S-Video cable between the S-VIDEO OUT jack on the rear of the VCR and the S-VIDEO IN jack on the TV.

Plug & Play

Auto Clock Set/Auto Tuner Set

ATTENTION
If you use a cable box, Plug & Play will not function; set the clock and tuner channels manually. (☞ pg.10 – 14)



IMPORTANT
- Don't press any buttons on the VCR or remote while Plug & Play is in progress.
- If you perform Plug & Play successfully, there's no need to perform the Clock (☞ pg. 10) and Tuner (☞ pg. 13) procedures. If, however, you want to add or delete channels, refer to "Add Or Delete A Channel" on page 14.

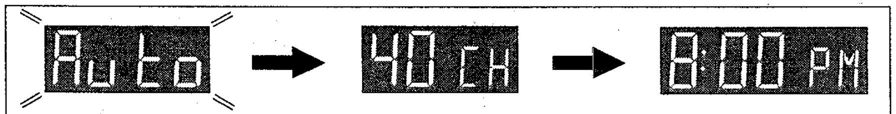
The Plug & Play function sets the clock and tuner channels automatically when power is first connected to the VCR. The antenna cable must be connected for the Plug & Play function.

The time and date can be set automatically from clock setting data that is transmitted by one of the regular TV broadcast channels. We call this TV channel the "Host Channel" and it is a PBS channel in your area.

1 PLUG & PLAY SETUP

Connect the antenna cable to the VCR (☞ pg. 6). Then connect the VCR's power plug to an AC outlet. Do not power on the VCR. The clock and tuner channels will be set automatically.

NOTES:
- *Auto clock set is performed first. The auto clock set function scans all the channels received by your VCR to find the Host Channel and then sets the clock. "Auto" blinks on the front display panel during Auto clock set.*
- *Auto channel set is performed next. The auto channel set function scans all the channels that are receivable by your VCR. It then automatically assigns each receivable channels to the **CH▲▼** (+/–) buttons. It skips non-receivable channels. During auto channel set the channel numbers are displayed as they are scanned and set.*
- *When Plug & Play has been completed successfully the correct time is displayed.*
- *If an incorrect time or "– –:– –" appears on the display panel, see "What To Do If Plug & Play Has Failed" below.*



During Initial Auto Clock Set
"Auto" blinks.

During Auto Channel Set
The channel numbers are displayed as they are scanned and set.

Plug & Play Completed
The current time (including AM/PM) is displayed.

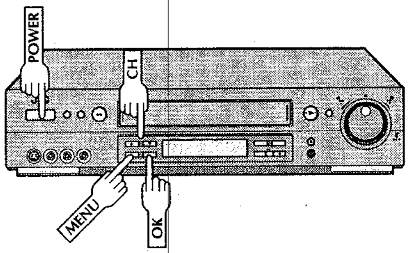
* If an incorrect time or "– –:– –" appears on the display panel, see "What To Do If Plug & Play Has Failed" below.

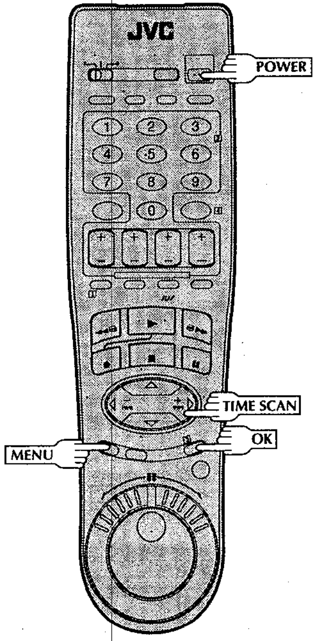
INFORMATION
- If "AUTO CLOCK" is set to "ON" at the Clock Set screen on page 11, the clock will be adjusted automatically by the host channel every hour on the hour (except for 11:00 PM, midnight, 1:00 AM and 2:00 AM) by the incoming PBS channel clock setting data. (This automatic clock adjustment can only be performed when the VCR's power is turned off. The clock will be adjusted on the hour based on the time displayed on the VCR, not on the actual real time.) The default setting of "AUTO CLOCK" is "ON".
- If the memory backup fails, because of a power outage or because the AC was removed from the VCR, Plug & Play will be performed when power is restored to the VCR.

What To Do If Plug & Play Has Failed
- If an incorrect time is displayed on the front display panel, you may be receiving the clock setting data of a PBS channel from an adjacent time zone, or an incorrect PBS channel from a cable TV system. In this case, perform the Semi-Auto (☞ pg. 11) or Manual Clock Set (☞ pg. 12) procedure. Auto channel set has already taken place and it need not be set again.
- If "- -:- -" appears on the display, your antenna cable may not be connected to the VCR or there may not be a Host PBS signal available in your area. Ensure that the antenna cable is connected correctly. Then power on and power off the VCR; the Plug & Play function will be automatically reactivated and "Auto" will be displayed on the VCR's front panel. If Plug & Play is not performed but the antenna cable is connected correctly, perform the Manual Clock Set procedure (☞ pg. 12). Auto channel set has not yet taken place, so please also perform the "Set Receivable Channels" procedure (☞ pg. 13).

Language

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





This VCR offers you the choice to view on-screen messages in English, Spanish or French (not including messages superimposed on the TV picture). Select the desired language using this procedure. The default setting is "ENGLISH".

1 TURN ON THE VCR

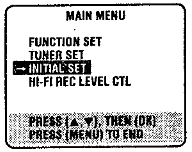
Press **POWER**.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS INITIAL SET SCREEN

At the Main Menu screen, move the highlight bar (arrow) to "INITIAL SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

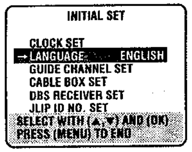

MAIN MENU

FUNCTION SET
TUNER SET
→ INITIAL SET
HI-FI REC LEVEL CTL

PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END

4 SELECT LANGUAGE

Move the highlight bar (arrow) to "LANGUAGE" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to select the desired language.


INITIAL SET

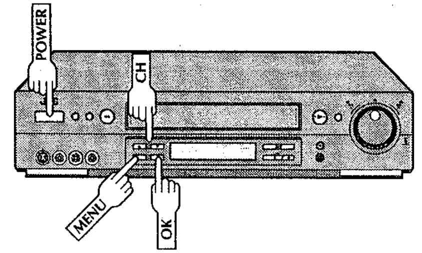
CLOCK SET
→ LANGUAGE ENGLISH
GUIDE CHANNEL SET
CABLE BOX SET
DBS RECEIVER SET
JLIP ID NO. SET
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END

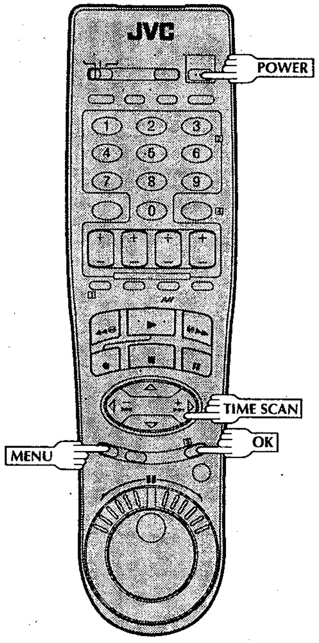
5 RETURN TO NORMAL SCREEN

Press **MENU**.

Clock

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





Perform clock setting only if the clock has not been set correctly by the Plug & Play function or you use a cable box. Access the Clock Set screen to perform the Semi-Auto or Manual clock setting procedure. Each procedure starts from step **5**.
If you use a cable box, set the clock manually. (☞ pg. 12)

Preparation

1

TURN ON THE VCR

Press **POWER**.

2

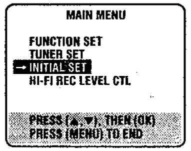
ACCESS MAIN MENU SCREEN

Press **MENU**.

3

ACCESS INITIAL SET SCREEN

At the Main Menu screen, move the highlight bar (arrow) to "INITIAL SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

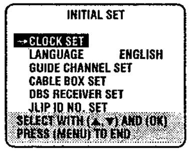

MAIN MENU
FUNCTION SET
TUNER SET
→ INITIAL SET
HI-FI REC LEVEL CTL
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END

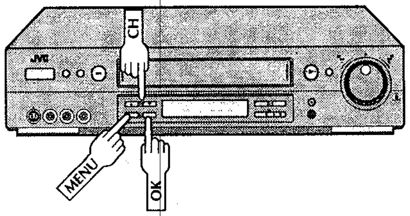
4

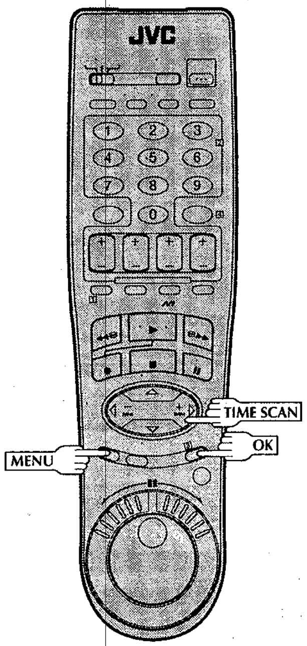
ACCESS CLOCK SET SCREEN

Move the highlight bar (arrow) at the Initial Set screen to "CLOCK SET" by pressing **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

- "CABLE BOX USERS SET CLOCK MANUALLY" appears on the screen for about 5 seconds, then the Clock Set screen appears.


INITIAL SET
→ CLOCK SET
LANGUAGE ENGLISH
GUIDE CHANNEL SET
CABLE BOX SET
DBS RECEIVER SET
JLIP ID NO. SET
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END





Semi-Auto

You can change the Host Channel/D.S.T. /Time Zone setting manually.

5

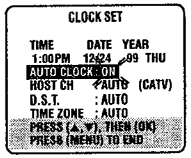
SET AUTO CLOCK TO ON

At the Clock Set screen, press **OK** or **TIME SCAN** ▷ repeatedly to move the highlight bar to "AUTO CLOCK" and press **CH ▲▼** or **TIME SCAN** △▽ to set to "ON".

a– To select the Host Channel — go to step **6**

b– To select the D.S.T. mode — go to step **7**

c– To select the Time Zone — go to step **8**


CLOCK SET
TIME DATE YEAR
1:00PM 12/24 99 THU
AUTO CLOCK : ON
HOST CH : AUTO (CATV)
D.S.T. : AUTO
TIME ZONE : AUTO
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END

NOTE:

The time that has been set previously will be erased when "AUTO CLOCK", "HOST CH", "D.S.T." or "TIME ZONE" setting is changed.

6

SELECT HOST CHANNEL

You can either select "AUTO" or enter a PBS channel number. Move the highlight bar to "HOST CH" by pressing **OK** or **TIME SCAN** ▷, then press **CH ▲▼** or **TIME SCAN** △▽ to set to "AUTO" or the desired PBS channel number.

NOTE:

There are some PBS channels that do not transmit clock setting data.

7

SELECT D.S.T. MODE

You have three choices:

a– Select "AUTO" and the adjustment to your VCR's clock will be made according to the incoming signal from the host channel.

b– Select "ON" and the adjustment will be made based on the clock itself.

c– Select "OFF" if Daylight Saving Time does not apply to you.

Move the highlight bar to "D.S.T." by pressing **OK** or **TIME SCAN** ▷, then press **CH ▲▼** or **TIME SCAN** △▽ to select the desired mode.

****AUTO DAYLIGHT SAVING TIME**

This function enables automatic adjustment of the VCR's clock at the start and end of Daylight Saving Time.
With Auto DST activated, . . .

. . . on the first Sunday of April at 2:00 AM, the clock is adjusted to 3:00 AM.

. . . on the last Sunday of October at 2:00 AM, the clock is adjusted to 1:00 AM.

8 SELECT TIME ZONE

You can select the time zone automatically or manually. Move the highlight bar to "TIME ZONE" by pressing **OK** or **TIME SCAN** ▷, then press **CH ▲▼** or **TIME SCAN** △▽ to select "AUTO" or the desired time zone.

AUTO → HAWAII → ALASKA → PACIFIC → MOUNTAIN → CENTRAL → EASTERN → ATLANTIC → AUTO

NOTE:

*If an incorrect time is displayed by the Plug & Play function, you may be receiving the clock setting data of a PBS channel from an adjacent time zone or from an incorrect PBS channel from a cable TV system. If you selected "AUTO" for the host channel in step **6**, be sure to select the correct time zone manually.*

9 RETURN TO NORMAL SCREEN

Press **MENU**.

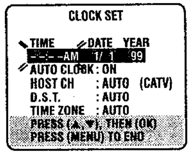
IMPORTANT

Turn the VCR off after performing the Semi-Auto Clock Set procedure. "Auto" will appear on the front display panel when the clock is being set. The current time will appear automatically when the clock is set.

Manual

5 SET TIME

Press **CH ▲▼** or **TIME SCAN** △▽ until the desired time appears, then press **OK** or **TIME SCAN** ▷.



CLOCK SET

```
TIME        DATE   YEAR
-- : -- AM   1/ 1   99
AUTO CLOCK : ON
HOST CH    : AUTO   (CATV)
D.S.T.     : AUTO
TIME ZONE  : AUTO
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END
```

- Press and hold **CH ▲▼** or **TIME SCAN** △▽ to change the time by 30-minute increments.
- When the time is entered manually, "AUTO CLOCK" will be automatically set to "OFF", and "HOST CH" and "TIME ZONE" will disappear.

6 SET DATE

Press **CH ▲▼** or **TIME SCAN** △▽ until the desired date appears, then press **OK** or **TIME SCAN** ▷.

- Press and hold **CH ▲▼** or **TIME SCAN** △▽ to change the date by 15-day increments.

7 SET YEAR

Press **CH ▲▼** or **TIME SCAN** △▽ until the desired year appears, then press **OK** or **TIME SCAN** ▷ twice.

8 SELECT D.S.T. MODE

Press **CH ▲▼** or **TIME SCAN** △▽ to select the desired mode.

a– Set to "ON" so that the adjustment to your VCR's clock will be made on the clock itself.

b– Set to "OFF" if Daylight Saving Time does not apply to you.

9 START CLOCK

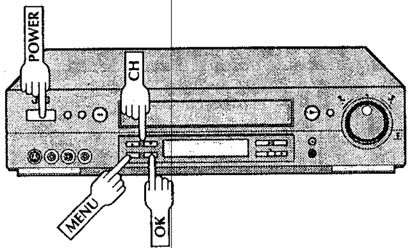
Press **MENU** and normal screen appears.

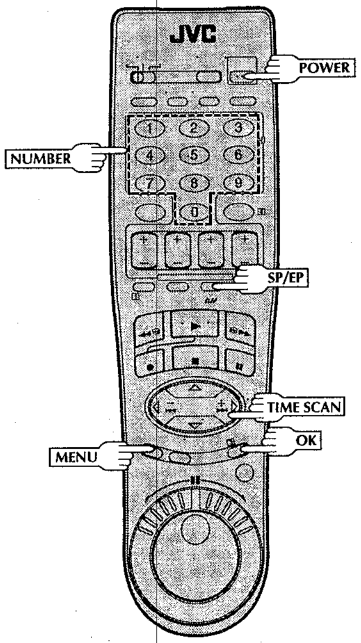
To Make Corrections

Press **OK** or **TIME SCAN** ▷ until the item you want to change blinks, then press **CH ▲▼** or **TIME SCAN** △▽.

Tuner

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





INFORMATION

The VCR detects the band (TV or CATV) and selects the correct band automatically during Auto Channel Set. The selected band will be displayed on the right side of "BAND" on the Tuner Set screen.

Set Receivable Channels

1 TURN ON THE VCR

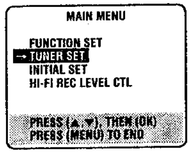
Press **POWER**.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS TUNER SET SCREEN

Move the highlight bar (arrow) to "TUNER SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

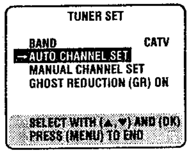


MAIN MENU

```
FUNCTION SET
→ TUNER SET
INITIAL SET
HI-FI REC LEVEL CTL
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END
```

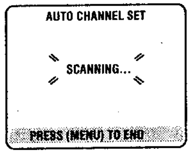
4 PERFORM AUTO CHANNEL SET

Move the highlight bar (arrow) to "AUTO CHANNEL SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.



TUNER SET

```
BAND                         CATV
→ AUTO CHANNEL SET
MANUAL CHANNEL SET
GHOST REDUCTION (GR) ON
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```



AUTO CHANNEL SET

```
SCANNING...
PRESS (MENU) TO END
```

- Receivable channels in your area are automatically assigned to the **CH▲▼** (+/–) buttons, and non-receivable channels are skipped.
- The ghost reduction mode (☞ pg. 14) will be automatically set to "STANDARD" for all the receivable channels.

NOTES:

- *At the end of Auto Channel Set, "SCAN COMPLETED" appears on screen.*
- *If the scan was unsuccessful, "SCAN COMPLETED–NO SIGNAL" appears on screen. Check the connections and start again.*

5 RETURN TO NORMAL SCREEN

Press **MENU**.

Add Or Delete A Channel

1 ACCESS MAIN MENU SCREEN

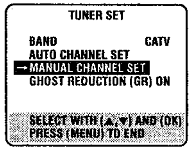
Press **MENU**.

2 ACCESS TUNER SET SCREEN

Move the highlight bar (arrow) to "TUNER SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 ACCESS MANUAL CHANNEL SET SCREEN

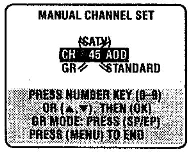
Move the highlight bar (arrow) to "MANUAL CHANNEL SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.



```
TUNER SET

BAND                      CATV
AUTO CHANNEL SET
→MANUAL CHANNEL SET
GHOST REDUCTION (GR) ON

SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4 ADD OR SKIP DESIRED CHANNEL

Input the channel number using the **NUMBER** keys or by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "SKIP". Repeat for each channel you want to skip. Input the channel number using the **NUMBER** keys, then press **OK** or **TIME SCAN** ▷ to set to "ADD" the channel.



```
MANUAL CHANNEL SET

(CATV)
CH  45 ADD
GR     STANDARD

PRESS NUMBER KEY (0–9)
OR (▲,▼), THEN (OK)
GR MODE: PRESS (SP/EP)
PRESS (MENU) TO END
```

5 RETURN TO NORMAL SCREEN

Press **MENU**.

About Ghosts

Double images of a TV program, or a "ghost", is a common problem with TV reception in urban areas. A broadcasting signal, because of being reflected from some surface (building, mountain, etc.), arrives slightly later than the signals arriving directly from the TV station. This causes ghosts such as followings:

- Double images
- Faint images
- Distorted images
- Distorted colors
- Vertically jittered images

Ghost Reduction

This VCR is equipped with the Ghost Reduction Tuner. It reduces the ghosts based on a GCR (Ghost Canceller Reference) signal sent from a TV station. The ghost reduction mode can be set for each channel independently.

NOTES:

- *Ghosts may not be reduced in the following cases:*
  - *The broadcasting signal does not have a GCR signal.*
  - *The antenna is not connected correctly.*
  - *There are too many ghosts.*
  - *The signal is reflecting from moving objects (airplane, etc.).*
- *The images on the screen may be distorted when tuning from one channel to another or the power is turned on while the ghost reduction tuner is activated.*

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS TUNER SET SCREEN

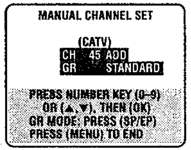
Move the highlight bar (arrow) to "TUNER SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 ACCESS MANUAL CHANNEL SET SCREEN

Move the highlight bar (arrow) to "MANUAL CHANNEL SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

4 SELECT CHANNEL AND GHOST REDUCTION MODE

Input the channel number using the **NUMBER** keys or by pressing **CH▲▼** or **TIME SCAN** △▽. Then press **SP/EP** to select the desired ghost reduction mode.



```
MANUAL CHANNEL SET

(CATV)
CH  45 ADD
GR     STANDARD

PRESS NUMBER KEY (0–9)
OR (▲,▼), THEN (OK)
GR MODE: PRESS (SP/EP)
PRESS (MENU) TO END
```

STANDARD: Normally select this.
SOFT: Select when you prefer softer picture than when "STANDARD" is selected.
OFF: Select when neither STANDARD nor SOFT improves the picture.

- Repeat step **4** for other channels you want to set the ghost reduction mode.
- Changing the setting of the ghost reduction mode is not possible during Record Pause.

5 RETURN TO NORMAL SCREEN

Press **MENU**.

To cancel the ghost reduction mode for all the channels at once

Access TUNER SET screen (☞ pg. 13, step 3), and select "OFF" for "GHOST REDUCTION (GR)" by pressing **TIME SCAN** ▷ or **OK**.

To check the ghost reduction mode for the current channel

Press **OSD**. (☞ pg. 23)

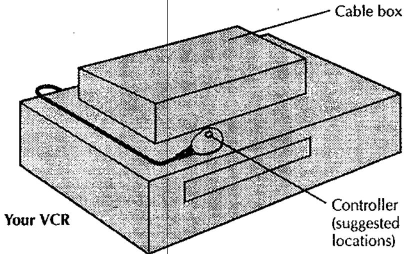
Cable Box Control

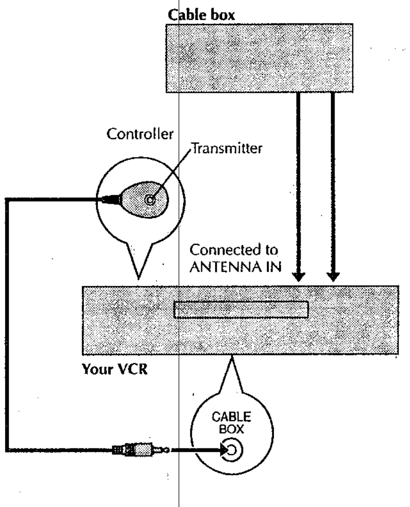
Suggested Location

Place the cable box on top of the VCR. Attach the VCR's Controller to the top of the VCR with the Controller's transmitter pointed towards the cable box's remote sensor.

ATTENTION:

The Controller can also control a DBS receiver. If both a cable box and a DBS receiver are used, position the controller so its signal reaches the remote control sensors of both the cable box and DBS receiver.





This procedure is required if you receive your TV channels through a cable box (descrambler). The Controller allows the VCR to automatically switch the cable box channel during timer-recording. The Controller is effective for recording shows that have been programmed using VCR Plus+ (☞ pg. 44) or Express Timer Programming (☞ pg. 48).

Situate And Connect Controller

1 SITUATE CONTROLLER

Place the Controller so that the path between its transmitter and the cable box's remote sensor is unobstructed.

2 ATTACH CONTROLLER

Fasten securely using the supplied adhesive strip.

3 CONNECT CABLE BOX TO VCR

The connection method depends on the type of cable box you have.

If your cable box has AUDIO and VIDEO OUT connectors . . .

. . . connect them to the AUDIO and VIDEO IN connectors on your VCR. Set the VCR to channel "L-1" for the rear AUDIO and VIDEO IN connectors, or channel "F-1" for the front AUDIO and VIDEO IN connectors to use the cable box.

If your cable box doesn't have AUDIO and VIDEO OUT connectors . . .

. . . connect the antenna output connector on the cable box to the ANTENNA IN connector on the rear of your VCR.

Set the VCR tuner to the same channel as the cable box RF output (see page 16 also).

NOTE:

When connecting your cable box refer to its instruction manual.

4 CONNECT CONTROLLER TO VCR

Connect to the CABLE BOX connector on your VCR.

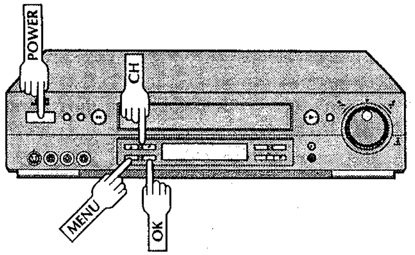
About Your Cable Box

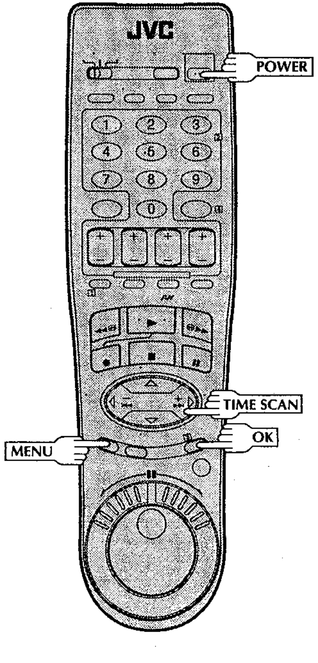
This VCR has two separate methods to control your Cable Box.

- *The VCR's Wireless Remote Control Unit can control your Cable Box.*
  This eliminates the need for a separate Cable Box Remote Control Unit.
- *The VCR's Controller can also control your Cable Box.*
  This allows the VCR to change your Cable Box's channel number during timer recording.

Each method must be set up separately. To set up the VCR's Remote Control unit, refer to page 61. To set up the Controller go to page 16.

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





Set Cable Box Output Channel & Cable Box Brand

1 TURN ON CABLE BOX

Select a channel other than channel 9 on your cable box.

2 TURN ON THE VCR

Press **POWER**.

3 ACCESS MAIN MENU SCREEN

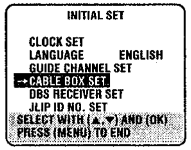
Press **MENU**.

4 ACCESS INITIAL SET SCREEN

Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "INITIAL SET", then press **OK** or **TIME SCAN** ▷.

5 ACCESS CABLE BOX SET SCREEN

Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "CABLE BOX SET", then press **OK** or **TIME SCAN** ▷.

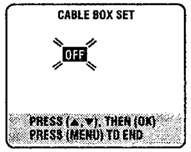


INITIAL SET

CLOCK SET
LANGUAGE ENGLISH
GUIDE CHANNEL SET
→CABLE BOX SET
DBS RECEIVER SET
JLIP ID NO. SET
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END

6 SELECT CABLE BOX OUTPUT CHANNEL

Your selection depends on how your cable box is connected to your VCR.

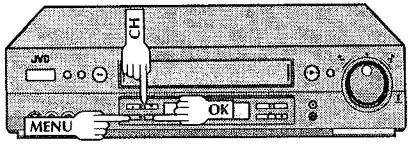


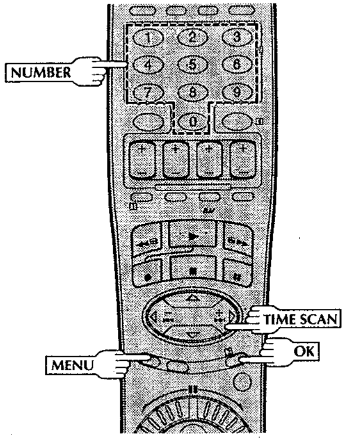
CABLE BOX SET

OFF

PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END

If your cable box is connected to your VCR using an RF connection . . .
. . . press **CH ▲▼** or **TIME SCAN** △▽ until the channel number representing the cable box's output (CH2 – CH9) appears on the screen.
If your cable box is connected to your VCR's FRONT AUDIO/VIDEO IN connectors . . .
. . . press **CH ▲▼** or **TIME SCAN** △▽ until "ON F-1 (FRONT)" appears on the screen.
If your cable box is connected to your VCR's REAR AUDIO/VIDEO IN connectors . . .
. . . press **CH ▲▼** or **TIME SCAN** △▽ until "ON L-1 (REAR)" appears on the screen.





INFORMATION

When the VCR's clock has not been set (with AUTO CLOCK set to ON), if you press **OK** in step 7, "CABLE BOX USERS SET CLOCK MANUALLY" will be displayed on the screen for about 5 seconds, then the Clock Set screen will appear; perform the manual clock setting procedure on page 12. If you press **MENU** after the clock has been set, the Cable Box Brand Set screen appears.

NOTES:

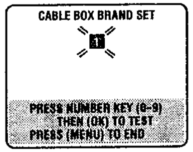
- *Although the supplied Controller is compatible with many different cable box brands, it is possible that it will not work with your cable box.*
- *If your cable box doesn't respond to any code between 1 and 25, you can't use the Controller to change cable box channels. In this case, make sure to leave the cable box turned on and tuned to the proper channel before the scheduled start of timer recording.*
  Please contact your cable company about the possibility of exchanging your current cable box with one that is compatible with your VCR.
- *The VCR can only change the cable box channel through the Controller during timer recording.*
- *If your cable box is one that can't be operated with a remote control (because it has no remote sensor), you can't use the Controller to change its channels. Make sure to leave the cable box turned on and tuned to the proper channel before the scheduled start of timer recording.*
- *If the VCR's memory backup expires because of a power failure, set the cable box output channel and brand again.*
- *If you are unable to set the Controller, please contact JVC toll free at 1-800-252-5722.*

7 ACCESS CABLE BOX BRAND SET SCREEN

Press **OK**.

8 ENTER CABLE BOX BRAND

Press the appropriate **NUMBER** keys to enter the Cable Box Code from the CABLE BOX BRAND LIST shown below, then press **OK**.



CABLE BOX BRAND SET

1

PRESS NUMBER KEY (0–9)
THEN (OK) TO TEST
PRESS (MENU) TO END

- If the cable box's channel changes to 9, setting is complete. Press **OK** and "CABLE BOX CONTROL IS ON" appears on the screen for about 5 seconds, then it returns to the normal screen.
- If the cable box's channel does not change to 9, press **CH ▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "NO", then press **OK**. By entering another code, repeat step **8** until the cable box's channel changes to 9.
- If the channel does not change after going through all the code numbers listed for your model of cable box, then try all the other numbers between 1 and 25.

CABLE BOX BRAND LIST

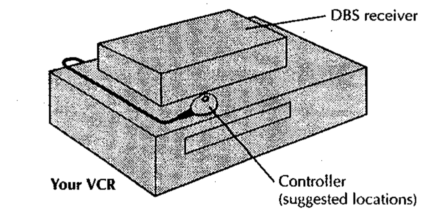
BRAND	CODE
ARCHER	1, 5, 17
CABLETENNA	1, 17
CABLEVIEW	15, 16, 17, 21, 25
CITIZEN	15, 16, 17, 21, 25
CURTIS	2, 8
DIAMOND	1, 17
EASTERN	19
GC BRAND	15, 16, 17, 21, 25
GEMINI	15
GENERAL INSTRUMENTS	1, 4, 6, 11, 12, 15
HAMLIN	10, 18, 19, 23
JASCO	15
JERROLD	1, 4, 6, 11, 12, 15
NOVAVISION	2, 8
OAK	7, 20
PANASONIC	13, 14
PULSER	15, 16, 17, 21, 25
RCA	13, 14
REGAL	10, 18, 19, 23
REGENCY	19
REMBRANDT	1, 16, 17
SAMSUNG	5, 16, 24
SCIENTIFIC ATLANTA	2, 8
SIGMA	7, 20
SL MARX	5, 16, 17, 24, 25
SPRUCER	13, 14
STARGATE	5, 15, 16, 17, 21, 24, 25
TELEVIEW	5, 16, 24
TOCOM	1, 4, 16
UNIKA	1, 17
UNIVERSAL	16, 17, 25
VIDEOWAY	3, 9, 22
ZENITH	3, 9, 22

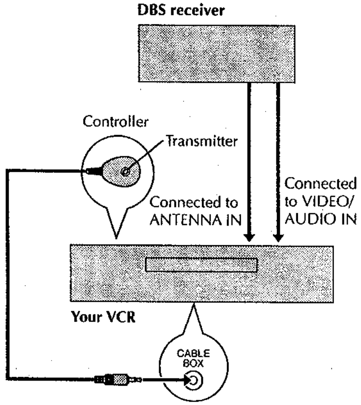
DBS Receiver Control

Suggested Location
Place the DBS (Direct Broadcast Satellite) receiver on top of the VCR. Attach the VCR's Controller to the top of the VCR with the Controller's transmitter pointed towards the DBS receiver's remote sensor.

ATTENTION:

The Controller can also control a cable box. If both a DBS receiver and a cable box are used, position the controller so its signal reaches the remote control sensors of both the DBS receiver and cable box.





About Your DBS Receiver

This VCR has two separate methods to control your DBS Receiver.

- *The VCR's Wireless Remote Control Unit can control the power and channel functions of your DBS Receiver. For these functions, the need for a separate DBS Receiver Control Unit is eliminated.*
- *The VCR's Controller can also control your DBS Receiver. This allows the VCR to change your DBS receiver's channel number during timer recording.*

Each method must be set up separately. To set up the VCR's Remote Control unit, refer to page 62. To set up the Controller go to page 19.

The following procedure is required if you receive satellite channels through a DBS (Direct Broadcast Satellite) Receiver. The Controller allows the VCR to automatically switch the DBS Receiver's channels during timer recording.

NOTES:

- *The VCR can automatically change the DBS Receiver channels using the controller when the VCR has been programmed using Express Timer Programming (☞ pg. 48).*
  Because satellite programming does not use PlusCode; the Controller cannot change the DBS Receiver channels during VCR Plus+ Timer Recording.
- *If a cable box is also used it is recommended that you connect the DBS receiver to your VCR's A/V inputs and the cable box to your VCR's antenna input.*

Situate And Connect Controller

1 SITUATE CONTROLLER

Place the Controller so that the path between its transmitter and the DBS receiver's remote sensor is unobstructed.

2 ATTACH CONTROLLER

Fasten securely using the supplied adhesive strips.

3 CONNECT DBS RECEIVER TO VCR

The connection method depends on the type of DBS receiver you have.

If your DBS receiver has AUDIO and VIDEO OUT connectors . . .
. . . connect them to the AUDIO and VIDEO IN connectors on your VCR. Set the VCR to channel "L-1" for the rear AUDIO and VIDEO IN connectors, or channel "F-1" for the front AUDIO and VIDEO IN connectors to use the DBS receiver.
If your DBS receiver doesn't have AUDIO and VIDEO OUT connectors . . .
. . . connect the antenna output connector on the DBS receiver to the ANTENNA IN connector on the rear of your VCR.
Set the VCR's tuner to the same channel as the DBS receiver's RF output. (See page 19 also.)

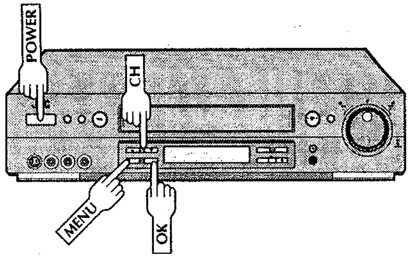
NOTE:

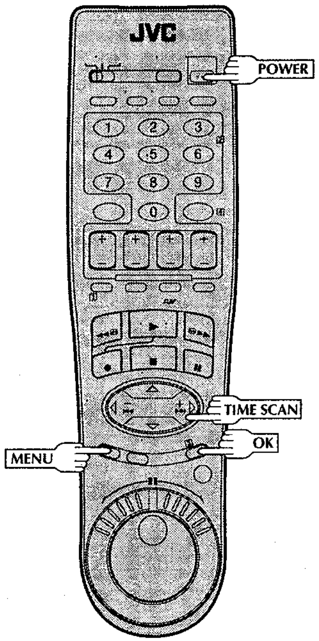
When connecting your DBS receiver refer to its instruction manual.

4 CONNECT CONTROLLER TO VCR

Connect to the CABLE BOX connector on your VCR.

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





Set DBS Receiver Output Channel & DBS Receiver Brand

1 TURN ON DBS RECEIVER

Select a channel other than channel 55, 100 or 205 on your DBS receiver.

2 TURN ON THE VCR

Press **POWER**.

- Set the VCR to the channel (3 or 4 or F-1 or L-1) on which the signals from the DBS receiver are received.

3 ACCESS MAIN MENU SCREEN

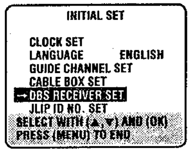
Press **MENU**.

4 ACCESS INITIAL SET SCREEN

Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "INITIAL SET", then press **OK** or **TIME SCAN** ▷.

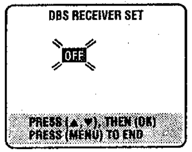
5 ACCESS DBS RECEIVER SET SCREEN

Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "DBS RECEIVER SET", then press **OK** or **TIME SCAN** ▷.


INITIAL SET
CLOCK SET
LANGUAGE ENGLISH
GUIDE CHANNEL SET
CABLE BOX SET
→DBS RECEIVER SET
JLIP ID NO. SET
SELECT WITH (▲, ▼) AND (OK)
PRESS (MENU) TO END

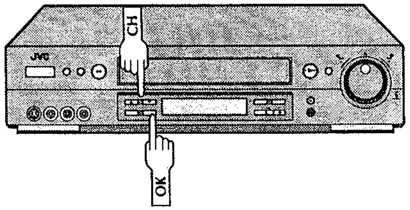
6 SELECT DBS RECEIVER OUTPUT CHANNEL

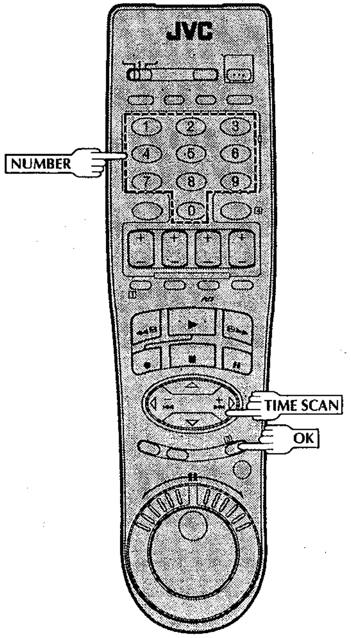
Your selection depends on how your DBS receiver is connected to your VCR.


DBS RECEIVER SET
OFF
PRESS (▲, ▼), THEN (OK)
PRESS (MENU) TO END

If your DBS receiver is connected to your VCR using an RF connection . . .
. . . press **CH ▲▼** or **TIME SCAN** △▽ until the channel number representing the DBS receiver's output (CH3 – CH4) appears on the screen.
If your DBS receiver is connected to your VCR's FRONT AUDIO/VIDEO IN connectors . . .
. . . press **CH ▲▼** or **TIME SCAN** △▽ until "ON F-1 (FRONT)" appears on the screen.
If your DBS receiver is connected to your VCR's REAR AUDIO/VIDEO IN connectors . . .
. . . press **CH ▲▼** or **TIME SCAN** △▽ until "ON L-1 (REAR)" appears on the screen.

CONTINUED ON NEXT PAGE



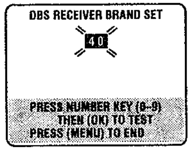


7 ACCESS DBS RECEIVER BRAND SET SCREEN

Press **OK**.

8 SET DBS RECEIVER BRAND

Press the appropriate **NUMBER** keys to enter the DBS Receiver Code from the following list, then press **OK**.



BRAND	CODE
JVC (DISH Network)	51
ECHOSTAR (DISH Network)	51
PRIMESTAR	50
SONY (DSS)	41
RCA (DSS)	40

- After **OK** is pressed, the program currently received through the DBS receiver will appear for about 10 seconds.
- If the DBS receiver's channel changes to the channel listed below for your brand of DBS receiver, setting is complete. Press **OK** and "DBS RECEIVER CONTROL IS ON" appears on the screen for about 5 seconds, then it returns to the normal screen.

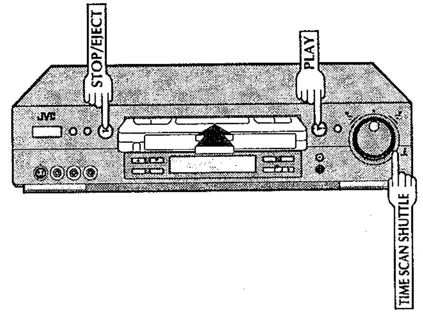
  JVC → 100
  ECHOSTAR → 100
  PRIMESTAR → 55
  SONY → 205
  RCA → 205
- If the DBS receiver's channel does not change as shown above, press **CH ▲▼** or **TIME SCAN △▽** to move the highlight bar (arrow) to "NO", then press **OK**. Re-enter the correct code.

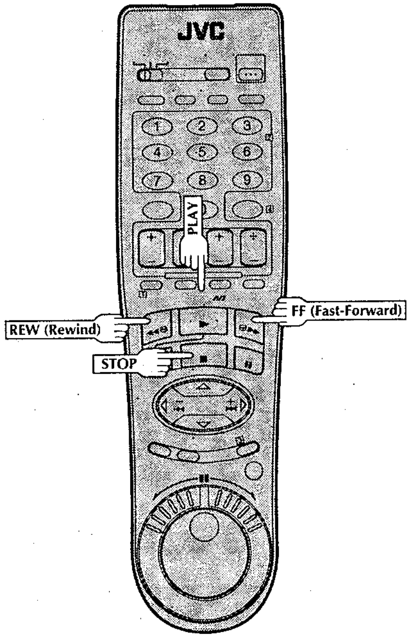
NOTES:

- *It is possible that the Controller will not work with all types of DBS receiver.*
- *If your DBS receiver doesn't respond to the code, you can't use the Controller to change satellite channels. In this case, make sure to leave the DBS receiver turned on and tuned to the proper channel before the scheduled start of timer recording.*
- *The VCR can only change the satellite channel through the Controller during timer recording.*
- *If your DBS receiver is one that can't be operated with a remote control (because it has no remote sensor), you can't use the Controller to change its channels. Make sure to leave the DBS receiver turned on and tuned to the proper channel before the scheduled start of timer recording.*
- *If you are unable to set the Controller, please contact JVC toll free at 1-800-252-5722.*

Simple Playback

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





1 LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is pointing towards the VCR. Don't apply too much pressure when inserting.

- The VCR's power comes on automatically.
- The counter is automatically reset to "0:00:00".
- If the cassette's record safety tab has been removed, playback begins automatically.

2 FIND PROGRAM START POINT

If the tape is advanced past the start point, press **REW** or turn the **TIME SCAN SHUTTLE** ring to the left.
To go forward, press **FF** or turn the **TIME SCAN SHUTTLE** ring to the right.

3 START PLAYBACK

Press **PLAY**. "VIDEO CALIBRATION" appears on the screen (when VIDEO CALIBRATION is set to "ON" ☞ pg. 35).

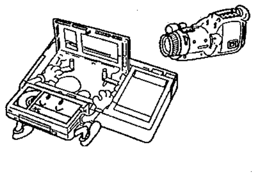
4 STOP PLAYBACK

Press **STOP** or **STOP/EJECT**. Then press **STOP/EJECT** to remove the cassette.

Usable cassettes

Full-Size VHS
T-30 (ST-30**)
T-60 (ST-60**)
T-90
T-120 (ST-120**)
T-160 (ST-160**)
ST-210**

Compact VHS*
TC-20 (ST-C20**)
TC-30 (ST-C30**)
TC-40 (ST-C40**)



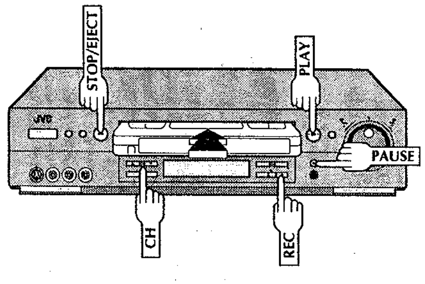
* Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.

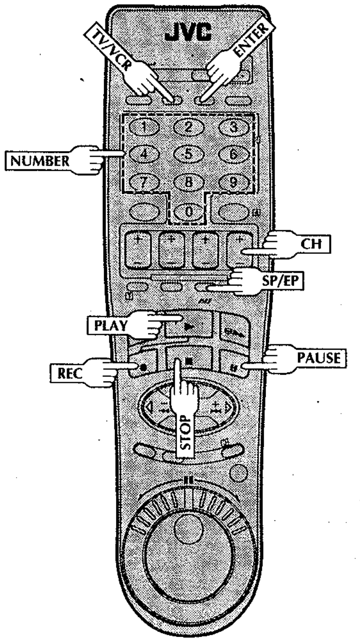
** This VCR can record on regular VHS and Super VHS cassettes. While only VHS signals can be recorded on regular VHS cassettes•, both VHS and Super VHS signals can be recorded and played back using Super VHS cassettes.

• *By using S-VHS ET it is possible to record and play back with S-VHS picture quality on VHS cassettes with this VCR.*

Simple Recording

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





1

LOAD A CASSETTE

Make sure the record safety tab is intact. If not, cover the hole with adhesive tape before inserting the cassette.

2

SELECT RECORDING CHANNEL

Press **CH▲▼** (+/–). Or press the appropriate **NUMBER** keys, then press **ENTER**. (The channel changes after a few seconds whether you press **ENTER** or not.)

- If you use the RF connection, by pressing the **TV/VCR** button, select VCR mode to view the program to be recorded.

3

SET TAPE SPEED

Press **SP/EP** to set the recording speed.

4

START RECORDING

Press and hold **REC** and press **PLAY** on the remote control, or press **REC** on the VCR's front panel.

Video Calibration takes place at the beginning of both the first SP and the first EP recording after inserting the cassette (when Video Calibration is set to "ON", ☞ pg. 35).

5

PAUSE/RESUME RECORDING

Press **PAUSE**. Press **PLAY** to resume recording.

- During record pause, you can change the recording channel by using the **CH▲▼** (+/–) buttons or **NUMBER** keys.

Video Calibration will not take place if the tape speed is changed while in record pause mode.

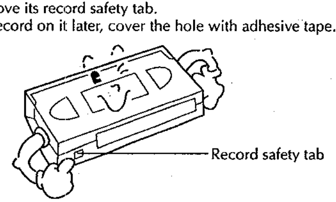
6

STOP RECORDING

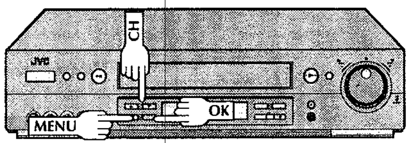
Press **STOP** or **STOP/EJECT**. Then press **STOP/EJECT** to remove the cassette.

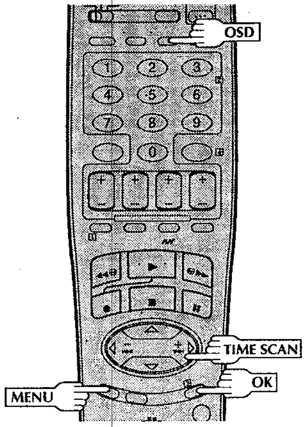
Accidental erasure prevention

- To prevent accidental recording on a recorded cassette, remove its record safety tab.
  To record on it later, cover the hole with adhesive tape.



Playback Features





To recall an indication

1 Press **OSD**.
- All indications corresponding to the current status are displayed for 5 seconds. After that, the counter information and RECORD/PAUSE if in the Record Pause mode, are left displayed on the screen.

2 Press **OSD** again to clear the display.
- The RECORD/PAUSE indication is left displayed on the screen.

Superimpose

This function, switchable between ON and OFF, determines whether or not operational indicators will appear on screen.

1

ACCESS MAIN MENU SCREEN

Press **MENU**.

2

ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

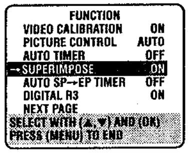
3

SELECT SUPERIMPOSE SET MODE

Move the highlight bar (arrow) to "SUPERIMPOSE" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to select the desired mode:

a– Select "ON" if you want the superimposed operational indications on the TV screen.

b– Select "OFF" if you do not want the superimposed operational indications on the screen.



```
            FUNCTION
  VIDEO CALIBRATION      ON
  PICTURE CONTROL      AUTO
  AUTO TIMER            OFF
→SUPERIMPOSE             ON
  AUTO SP→EP TIMER      OFF
  DIGITAL R3             ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4

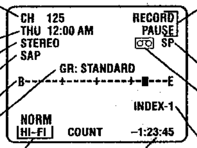
RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *If you engage the Record Pause mode, RECORD/PAUSE is displayed regardless of the Superimpose mode setting.*
- *If you select a channel on which no signal is received, the channel number is displayed regardless of the Superimpose mode setting.*

The superimposed indication on the TV screen tells you what the VCR is doing.



Tuned-in channel or AUX(iliary) mode
When the channel is changed, the new channel is displayed on the screen for 5 seconds.

Clock time

Stereo program indication

Second Audio Program indication

Tape position indicator

Ghost reduction mode

Audio mode indications

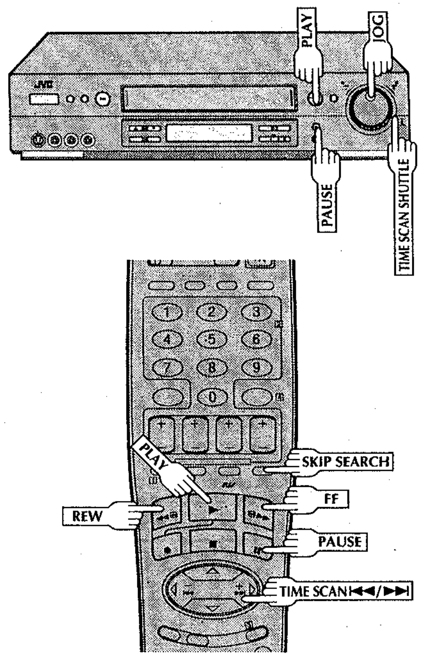
Counter reading
Switchable to the tape remaining time display

Operation mode
When the operation mode is changed, the new mode is displayed — RECORD (5 sec.), PLAY (5 sec.), FF/REW (5 sec. when engaged from Stop mode), RECORD PAUSE (for as long as Pause is engaged), and ITR *:** (5 sec.).

Tape speed indication

"Cassette Loaded" mark
When a cassette is loaded, the mark is displayed for 5 seconds. It blinks when the VCR's EJECT button is pushed.

INDEX indication
"STILL" and "SLOW 1/6" are displayed during still picture and slow motion respectively.



High-Speed Search

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still, turn the **TIME SCAN SHUTTLE** ring to the right for forward high-speed search, or to the left for reverse high-speed search.

OR

During playback or still, press **FF** for forward high-speed search, or **REW** for reverse high-speed search.

- The search speed is 7 times normal playback speed with SP recordings, and 21 times normal with EP recordings.
- TimeScan will be automatically engaged during high-speed search with an SP-recorded tape.
- If the tape speed changes from SP to EP during high-speed search the TimeScan mode will change to EP search mode.
- During high-speed search with an EP-recorded tape, pressing **TIME SCAN** for the opposite direction or turning the **TIME SCAN SHUTTLE** ring to the opposite direction changes it to 7x-speed TimeScan search. (☞ pg. 38)

To resume normal playback, press **PLAY**.

NOTES:

- *For short searches, during playback or still, press and hold **FF** or **REW**. When released, normal playback resumes.*
- *Search speed is displayed on the left corner of your TV/ monitor when the Superimpose function is "ON". (☞ pg. 23)*

Still Picture/Frame-By-Frame Playback

1 PAUSE DURING PLAYBACK

Press **PAUSE**.

- "TIMESCAN AUDIO" must be set to "ON", or the sound will not be heard (☞ pg. 38).

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

OR

Press **PAUSE** repeatedly to advance one frame at a time.

OR

Press **TIME SCAN ⏭** repeatedly for forward frame-by-frame playback or **TIME SCAN ⏮** repeatedly for reverse frame-by-frame playback.

To resume normal playback, press **PLAY**.

Slow Motion (Pro-Slow*)/ Reverse Slow Motion/Reverse Motion Playback

* Smooth slow motion delivering an uninterrupted moving image without distortion.

1 ACTIVATE SLOW-MOTION PLAYBACK

For hands-free slow-motion, press **TIME SCAN ⏮** during playback to decrease speed in the forward direction. Continue to press **TIME SCAN ⏮** to select the reverse slow motion, reverse play and reverse search modes.

OR

During playback or still picture, turn the **TIME SCAN SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion.

OR

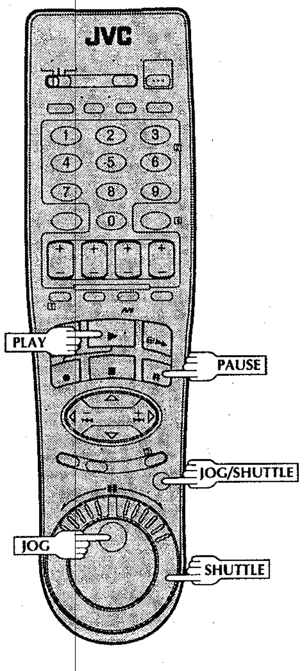
During still picture, press and hold **TIME SCAN ⏭** for forward slow motion, or press and hold **TIME SCAN ⏮** for reverse slow motion. Release to return to still picture.

OR

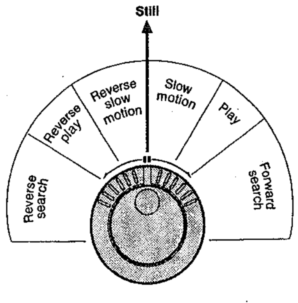
For forward slow motion during still picture, press and hold **PAUSE** for more than 2 seconds. Press **PAUSE** again to return to still picture.

To resume normal playback, press **PLAY**.

Refer to the chart on page 38 for the Play, Slow Motion and Search speeds that are selected using the **TIME SCAN SHUTTLE** ring and **TIME SCAN** buttons.



You can also use the remote control's **JOG** dial/**SHUTTLE** ring for the operations described on this page. First press the **JOG/SHUTTLE** button on the remote control so that the button lights up before use. Refer to the **SHUTTLE** ring illustration below as you read the procedures.
NOTE: The operations by the **JOG** dial/**SHUTTLE** ring do not include TimeScan.



Shuttle Ring Modes

Forward search	: 3 steps
Normal playback	
Slow motion	: 2 steps
Reverse slow motion	: 2 steps
Reverse playback	
Reverse search	: 3 steps

High-Speed Search (On the Remote Control)

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring all the way to the right for forward high-speed search, or to the left for reverse high-speed search. By releasing **SHUTTLE** still picture playback is selected.

To resume normal playback, press **PLAY**.

Variable-Speed Search/ Reverse Motion Playback (On the Remote Control)

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring to the right for forward variable-speed search, or to the left for reverse variable-speed search.

To resume normal playback, press **PLAY**.

Still Picture/Frame-By-Frame Playback (On the Remote Control)

1 PAUSE DURING PLAYBACK

Press **PAUSE**.

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

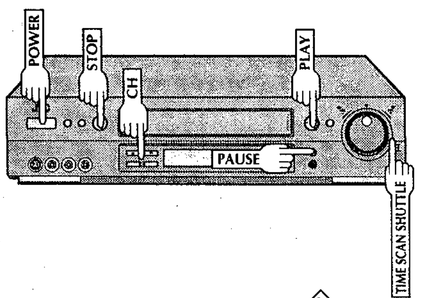
To resume normal playback, press **PLAY**.

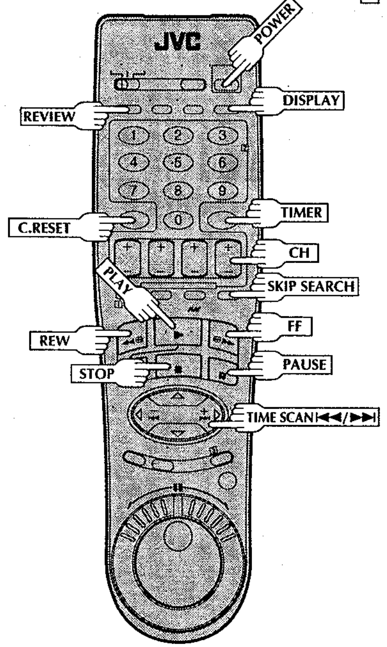
Slow Motion/Reverse Slow Motion (On the Remote Control)

1 ACTIVATE SLOW-MOTION PLAYBACK

During playback or still picture, turn the **SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion.

To resume normal playback, press **PLAY**.





Manual Tracking

Once playback begins, the VCR's automatic tracking function is engaged. If tracking noise appears in the picture, you can override this and make the adjustment manually.

1

ENGAGE MANUAL TRACKING MODE

During playback, press the **CH▲** and **▼** buttons on the VCR's front panel simultaneously to cancel the automatic tracking mode and enable manual tracking adjust.

2

ADJUST MANUAL TRACKING

Press **CH ▲** (+) or **▼** (–) on the VCR's front panel or remote. Press briefly for fine adjust, or press and hold for coarse adjust. Watch the screen and continue adjusting until optimum picture and sound quality are achieved.

3

RE-ENGAGE AUTOMATIC TRACKING

Press the **CH▲** and **▼** buttons on the VCR's front panel simultaneously.

- When automatic tracking is re-engaged, Video Calibration is automatically activated.

NOTES:

- *To obtain a noiseless still picture it may be necessary to adjust tracking in slow playback and then engage Pause.*
- *Manual tracking is possible during hands-free slow-motion. During hands-free slow-motion playback, simply press* **CH ▲** *(+) or* **▼** *(–) on the VCR's front panel or remote to adjust tracking.*

Skip Search

1

SKIP OVER UNWANTED SECTIONS

Press **SKIP SEARCH** 1 to 4 times during playback, with "CA PLAYBACK" set to "OFF" (☞ pg. 32). Each press initiates a 30-second period of fast-motion playback. Normal playback resumes automatically.

NOTES:

- *To return to normal playback during a Skip Search, press* **PLAY**.
- *When* **SKIP SEARCH** *is pressed during playback of a pre-recorded tape or a tape with the safety tab removed, the Skip Menu is displayed (☞ pg. 30). When this menu is displayed, select "SKIP SEARCH" to select the skip search function.*

Index Search

Index codes are placed on the tape at the start of each recording. You can find and automatically play back from the start of any recording using the Index Search function.

1

START SEARCH

While the tape is stopped, press **TIME SCAN ◀◀** or **▶▶I**.

2

ACCESS DISTANT CODE

To access a recording 2–9 index codes away, press **TIME SCAN I◀◀** or **▶▶I** repeatedly until the correct number is displayed on screen (only if "SUPERIMPOSE" is set to "ON" (☞ pg. 23). Playback begins automatically when the desired recording is located.

- If necessary press **REW** or **FF** when play starts to search visually to find the very beginning of the desired program.

NOTE:

An index code is not placed on the tape when recording is paused and then resumed.

Instant ReView

At the press of a button, you can power up your VCR, rewind the tape and begin viewing the most recently recorded or timer-recorded program.

1

ACTIVATE INSTANT REVIEW

After ensuring that the Timer mode is disengaged, press **REVIEW**.

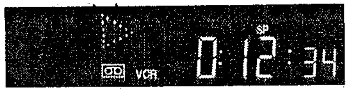
- The power comes on and the VCR rewinds to the index code indicating the start of the last timer-recorded program, then begins playback automatically.
- You can access a program 2–9 index codes away from the current position on the tape. If, for example, you have 5 programs recorded and you want to watch the third one, press **REVIEW** three times.
- If necessary press **REW** or **FF** when play starts to search visually to find the very beginning of the desired program.
- If the tape is already rewound when **REVIEW** is pressed, it will play the tape from the beginning. It will not fast forward to an index code.
- The Instant ReView function will also operate if the VCR's power is on.

Repeat Playback

1

START REPEAT

Press and hold **PLAY** (until " ▷ " blinks on the front display panel) during playback, then release.



- The entire tape is played back 50 times.

2

STOP REPEAT

To stop, press **STOP** at any time.

NOTE:

Pressing **PLAY, REW, FF, PAUSE** *or* **TIME SCAN I◀◀** *or* **▶▶I** *also stops Repeat Playback.*

Counter Reset

1

RESET COUNTER TO ZERO

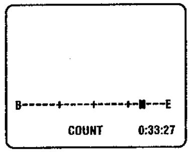
Press **C.RESET**.

NOTE:

By pressing the **DISPLAY** *button, you can change the display to show the counter reading, channel number, clock time or tape remaining time. (Channel number is not displayed during playback.)*

Tape Position Indicator

The Tape position indicator appears on screen when, from the stop mode, you press **FF, REW,** or use the **TIME SCAN SHUTTLE** ring, or perform an Index Search or Instant ReView. The position of " ▮ " in relation to "B" (Beginning) or "E" (End) shows you where you are on the tape.



NOTES:

- *"SUPERIMPOSE" must be set to "ON", or the indicator will not appear (☞ pg. 23).*
- *It may take a few seconds for the Tape Position Indicator to be displayed.*

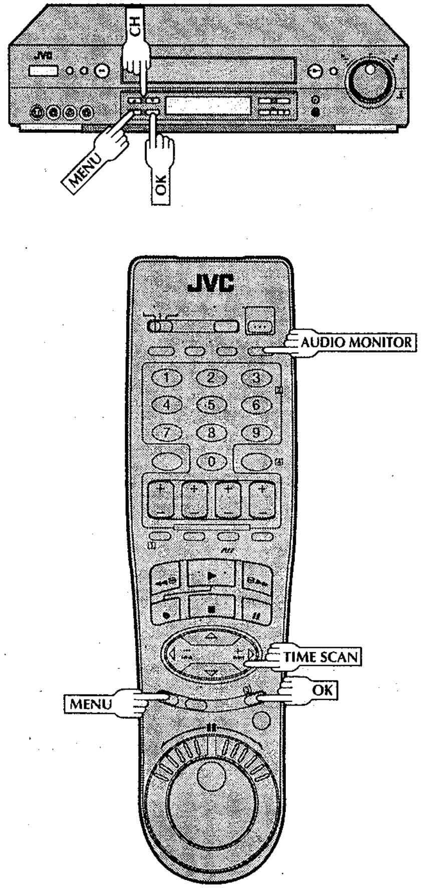
Next-Function Memory

The Next Function Memory "tells" the VCR what to do after rewinding. Before continuing, ensure that the VCR is in stop mode.

a– For Automatic Start Of Playback After Tape Rewind . . .
. . . press **REW**, then press **PLAY** within 2 seconds.
b– For Automatic Power Off After Tape Rewind . . .
. . . press **REW**, then press **POWER** within 2 seconds.
c– For Automatic Timer Standby After Tape Rewind . . .
. . . press **REW**, then press **TIMER** within 2 seconds.

NOTE:

It is not possible to select the Automatic Timer functions if the cassette's record safety tab is removed.



Picture Control

This feature helps you to adjust the playback picture quality according to your preference. *The default setting is "AUTO."

1

ACCESS MAIN MENU SCREEN

Press **MENU**.

2

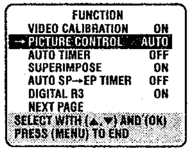
ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3

SELECT PICTURE CONTROL SET MODE

Move the highlight bar (arrow) to "PICTURE CONTROL" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to select the desired mode.



```
         FUNCTION
  VIDEO CALIBRATION      ON
→ PICTURE CONTROL      AUTO
  AUTO TIMER            OFF
  SUPERIMPOSE            ON
  AUTO SP→EP TIMER      OFF
  DIGITAL R3             ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

AUTO*: Normally select "AUTO".
It automatically adjusts the picture quality.
* When "VIDEO CALIBRATION" is set to "OFF" (☞ pg. 35), you can only select NORM instead of AUTO.

EDIT: Select when you dub tapes.

SOFT: Select when you want to soften the picture.

SHARP: Select when you want to sharpen the picture.

NOTE:

- When you select "EDIT", "SHARP" or "SOFT", the selected mode will not change until you select again.
- When you select "EDIT" to dub tapes, be sure to select "AUTO" (or "NORM" when "VIDEO CALIBRATION" is set to "OFF") after you finish dubbing the tapes.

4

RETURN TO NORMAL SCREEN

Press **MENU**.

NOTE:

Select "EDIT" when you are dubbing tapes. Refer to page 56.

Video Stabilizer

By activating the Video Stabilizer you can correct vertical vibrations in the picture when playing back unstable EP recordings that were made on another VCR. When this function is set to "ON", vertical vibration will be automatically corrected. *The default setting is "OFF".

1

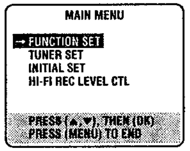
ACCESS MAIN MENU SCREEN

Press **MENU**.

2

ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

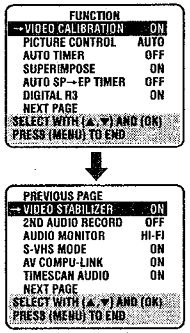


```
        MAIN MENU

→ FUNCTION SET
  TUNER SET
  INITIAL SET
  HI-FI REC LEVEL CTL

  PRESS (▲,▼), THEN (OK)
  PRESS (MENU) TO END
```

3

ACTIVATE VIDEO STABILIZER

Move the highlight bar (arrow) to "VIDEO STABILIZER" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "ON".



```
         FUNCTION
→ VIDEO CALIBRATION      ON
  PICTURE CONTROL      AUTO
  AUTO TIMER            OFF
  SUPERIMPOSE            ON
  AUTO SP→EP TIMER      OFF
  DIGITAL R3             ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

```
  PREVIOUS PAGE
→ VIDEO STABILIZER       ON
  2ND AUDIO RECORD      OFF
  AUDIO MONITOR       HI-FI
  S-VHS MODE             ON
  AV COMPU-LINK          ON
  TIMESCAN AUDIO         ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4

RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *When you finish viewing the tape, be sure to set it back to "OFF".*
- *Regardless of the setting, this function has no effect during recording and during special-effects playback.*
- *The Superimpose mode indications may jitter vertically when "VIDEO STABILIZER" is set to "ON".*
- *To watch recordings with close-caption, it is necessary to set the Video Stabilizer function to "OFF".*

Select The Soundtrack

Your VCR can record two soundtracks simultaneously (Normal and Hi-Fi) and play back the selected one, or both together. Or, when viewing a pre-recorded tape that contains two separate Hi-Fi audio programs, you can choose to listen to either one by selecting either "Hi-Fi L" or "Hi-Fi R" in step **3**.

1

ACCESS MAIN MENU SCREEN

Press **MENU**.

2

ACCESS FUNCTION SET SCREEN

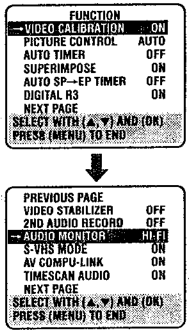
Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3

SELECT AUDIO MONITOR SET MODE

Move the highlight bar (arrow) to "AUDIO MONITOR" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to select the desired mode:

a– Hi-Fi
b– Hi-Fi L
c– Hi-Fi R
d– Normal
e– Mix



```
         FUNCTION
→ VIDEO CALIBRATION      ON
  PICTURE CONTROL      AUTO
  AUTO TIMER            OFF
  SUPERIMPOSE            ON
  AUTO SP→EP TIMER      OFF
  DIGITAL R3             ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

```
  PREVIOUS PAGE
  VIDEO STABILIZER      OFF
  2ND AUDIO RECORD      OFF
→ AUDIO MONITOR       HI-FI
  S-VHS MODE             ON
  AV COMPU-LINK          ON
  TIMESCAN AUDIO         ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4

RETURN TO NORMAL SCREEN

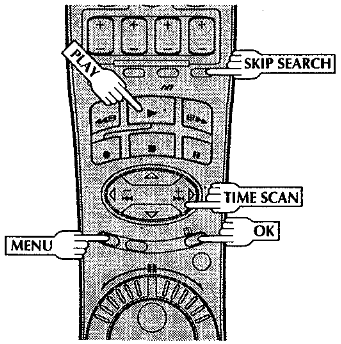
Press **MENU**.

NOTES:

- *If the tape being played back has no Hi-Fi soundtrack, the Normal soundtrack will be heard no matter what choice you make in step **3**.*
- *If RF connection is used for TV, even if Hi-Fi audio monitor is selected the sound will be mono and will be reproduced in both loudspeakers.*

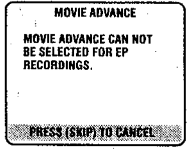
You can also select the soundtrack by simply pressing the remote control's **AUDIO MONITOR** button as follows:

Hi-Fi → Hi-Fi L → Hi-Fi R → Normal → Mix → Hi-Fi



ATTENTION

Movie Advance and Movie Advance (Preview) work only on prerecorded cassettes that have been recorded in the SP mode, and have no safety tab. If the VCR detects the EP mode after you press **OK** in step **4**, the following screen appears.



MOVIE ADVANCE

MOVIE ADVANCE CAN NOT BE SELECTED FOR EP RECORDINGS.

PRESS (SKIP) TO CANCEL

Skip Search will work for prerecorded EP tapes.

When "MOVIE ADVANCE" is selected...
- If you want to stop searching for the start of the movie, simply press **SKIP SEARCH** or **STOP**.

When "MOVIE ADVANCE (PREVIEW)" is selected...
- If **SKIP SEARCH** was inadvertently pressed, press it again to resume normal playback.
- While the VCR is searching for the next preview, if you see a preview you wish to view, press **SKIP SEARCH** and the VCR will immediately go to the start of that preview.
- If the VCR starts to reverse to a preview you do not wish to view, press **SKIP SEARCH** to initiate searching to the next preview.

NOTES:

- *Normally there is a period of black and no audio at the beginning and end of previews. The Movie Advance feature detects those parts where the picture fades to black and the audio fades to silence, and initiates fast-motion to skip over the detected previews.*
- *Some previews may not be detected and Movie Advance may not work properly.*
- *The setting you selected in step **3** remains in effect until the cassette is ejected.*
- *"MOVIE ADVANCE (PREVIEW)" does not use TimeScan when searching for the next preview.*

Patents Pending

Movie Advance

This feature helps you locate certain parts of prerecorded movies (rented or purchased) and works in two ways.
- You can go to the beginning of the movie, skipping over all previews.
- You can fast-motion the tape to the beginning of the next preview, so you can skip over previews one by one.

1 LOAD A CASSETTE

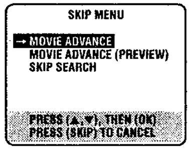
Insert a cassette that has a prerecorded movie (rented or purchased), with no safety tab, into the VCR. Playback begins automatically.

2 ACCESS SKIP MENU SCREEN

Press **SKIP SEARCH**.

3 SELECT MODE

Press **CH ▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to your choice.



SKIP MENU

→ MOVIE ADVANCE
MOVIE ADVANCE (PREVIEW)
SKIP SEARCH

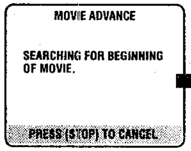
PRESS (▲,▼), THEN (OK)
PRESS (SKIP) TO CANCEL

a– Select "MOVIE ADVANCE" if you want to advance directly to the beginning of the movie.
b– Select "MOVIE ADVANCE (PREVIEW)" if you want to advance to the next preview.
c– Select "SKIP SEARCH"* if you do not want to perform Movie Advance, then press **OK** and the VCR enters stop mode. To activate the Skip Search function, see page 26.

* *If "CA PLAYBACK" is set to "AUTO" or "MANUAL" (☞ pg. 32), "COMMERCIAL ADVANCE" will be displayed on the screen instead of "SKIP SEARCH".*

4 PERFORM MOVIE ADVANCE

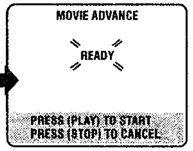
a– If you selected "MOVIE ADVANCE" in step **3** and press **OK**, the following screen will appear with a blue background. The VCR will rewind the beginning of the tape, then will fast-motion to the beginning of the movie. "READY" will appear and blink when the beginning of the movie is detected and the Stop mode will be engaged. Press **PLAY** to view the movie.



MOVIE ADVANCE

SEARCHING FOR BEGINNING OF MOVIE.

PRESS (STOP) TO CANCEL



MOVIE ADVANCE

READY

PRESS (PLAY) TO START
PRESS (STOP) TO CANCEL

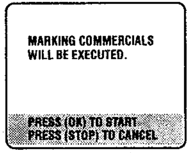
b– If you selected "MOVIE ADVANCE (PREVIEW)" in step **3** and press **OK**, the VCR will fast-motion to the beginning of the next preview and normal playback will resume when it is detected.
Each press of **SKIP SEARCH** fast-motions to the beginning of the next preview, thereby skipping over one preview each time.
The tape will forward-search a little past the start of the next preview, then will reverse-serach to the beginning of the preview and start playback.

Commercial Advance

Your VCR is equipped with the Commercial Advance feature, which can automatically fast-motion the tape during playback to skip over previously recorded TV commercials.

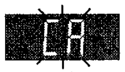
Commercial Advance works as follows:

[1] When recording is finished, the following display will appear on the screen and the VCR's front display panel.



MARKING COMMERCIALS WILL BE EXECUTED.

PRESS (OK) TO START
PRESS (STOP) TO CANCEL



* In case of timer recording, these displays will appear when all the preset programs are recorded. If you press **TIMER** to disengage the timer mode, these displays will appear even if all the programs are not recorded yet.

NOTE:
Commercials can only be marked if Commercial Advance Record is enabled (☞ pg. 32).

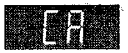
a– Press **OK** and step [2] will take place.
b– If you do not want to use Commercial Advance for the recorded program, press **STOP**.
c– If neither button is pressed within 60 seconds after the displays appear, step [2] will take place automatically.

IMPORTANT
If you press **STOP** in this step or stop marking midway in step [2] before the VCR is finished marking the commercials, data necessary for Commercial Advance will be lost and this feature will not work with the recording you made.

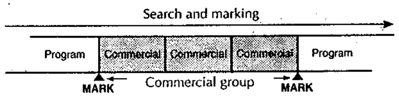
[2] The VCR rewinds the tape automatically to the beginning of the recording and seeks out the commercial groups which have been detected.

During search and marking

MARKING COMMERCIALS

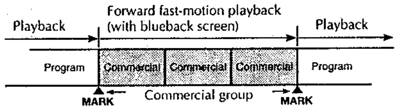


* If you want to stop marking midway, press **STOP** so that "MARKING IN PROCESS" appears on the screen and "CA" blinks on the front display panel. While those are displayed (for 5 seconds), press **STOP** again to cancel Commercial Advance marking of the rest of the recordings.
* If you want to watch a TV program while the VCR is marking commercials, first press **TV/VCR** on the remote control, then use the TV's channel selector to select the channel you want to watch.



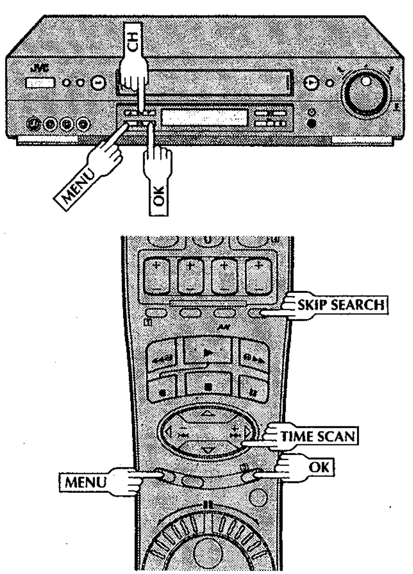
After having marked the start and end of all commercial groups of the recording(s), the VCR goes to its Stop mode. In the case of timer recording or Instant Timer Recording, the VCR shuts off automatically.

[3] During playback, the VCR automatically (when enabled ☞ pg. 32) fast-motions (with blueback screen) (☞ pg. 37) during the commercial groups that were marked in step [2].
* When Commercial Advance is forwarding the tape to skip over commercials, "CA SKIP" will be displayed in the top right corner of the TV screen.



NOTES:

- *The Commercial Advance Record processes marks the tape when the picture fades to black and the audio fades to silence. Normally there is a period of black and no audio at the beginning and end of commercials.*
- *A black screen or a scene with no audio signal during a program may be detected as the start or end of a commercial.*
- *When using the timer to record two adjacent shows on the same channel, better commercial detection accuracy can be obtained by programming each show separately.*
- *If you record over a commercial start or end mark the Commercial Advance feature will not work correctly.*
- *Commercial Advance tested with 6 hours recordings, longer recordings may be possible depending on the number of commercials contained in the broadcast.*
- *The VCR will resume normal playback after skipping 15 minutes of tape if no commercial group end mark is detected.*
- *If the end of the tape is reached during recording, the display as illustrated in step [1] appears, then...*
  - *in the case of timer recording or Instant Timer Recording, after step [2] takes place, the cassette will be ejected and the power will shut off.*
  - *in the case of normal recording, after step [2] takes place, the VCR will rewind to the beginning of the tape.*
- *During automatic commercial skipping, if the user presses **STOP** or **PLAY**, the VCR will resume normal play; furthermore, if the tape is reversed to before the commercial group and played, the commercial group will not automatically be skipped.*
- *If an index code or the end of a recording is detected during Commercial Advance's forward fast-motion playback, normal playback resumes automatically.*
- *Commercial Advance disables commercial marking when the recording is less than 15 minutes.*
- *Commercial Advance does not mark the start of a commercial group when it is in the first or last two minutes of a recording.*
- *Commercial Advance does not mark commercial groups which are less than 59 seconds or groups which contain only one commercial.*
- *Some portions of programs may be detected as commercials.*
- *Some commercials may not be detected properly.*



"CA(Commercial Advance) RECORD" and "CA PLAYBACK" are set to " OFF " at the factory. To set Commercial Advance perform the following steps to set "CA RECORD" to "ON" and "CA PLAYBACK" to "AUTO".

1 ACCESS MAIN MENU SCREEN

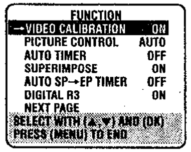
Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

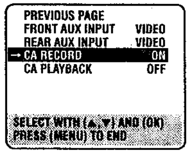
Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 SELECT CA RECORD SET MODE

Move the highlight bar (arrow) to "CA RECORD" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "ON".



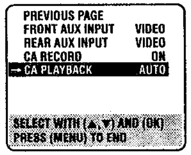
```
         FUNCTION
→VIDEO CALIBRATION      ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 SUPERIMPOSE            ON
 AUTO SP→EP TIMER      OFF
 DIGITAL R3             ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```



```
 PREVIOUS PAGE
 FRONT AUX INPUT     VIDEO
 REAR AUX INPUT      VIDEO
→CA RECORD              ON
 CA PLAYBACK           OFF

SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4 SELECT CA PLAYBACK SET MODE

Move the highlight bar (arrow) to "CA PLAYBACK" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "AUTO".



```
 PREVIOUS PAGE
 FRONT AUX INPUT     VIDEO
 REAR AUX INPUT      VIDEO
 CA RECORD              ON
→CA PLAYBACK          AUTO

SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

- Select "AUTO" to automatically skip over CA recorded commercials during playback.
- Select "MANUAL" to manually skip over CA recorded commercials by pressing **SKIP SEARCH**.
- Select "OFF" to disable CA Playback of CA recorded commercials.
- Press **SKIP SEARCH** during playback, with "MANUAL" (or "AUTO") selected, to fast-motion the tape to the end of the next commercial group or to the end of the recording, and then resume normal playback.

NOTE:

If you press **SKIP SEARCH** *during a commercial, the VCR may not resume normal playback at the end of the group of commercial. If this occurs press* **PLAY** *or* **STOP** *to resume normal playback.*

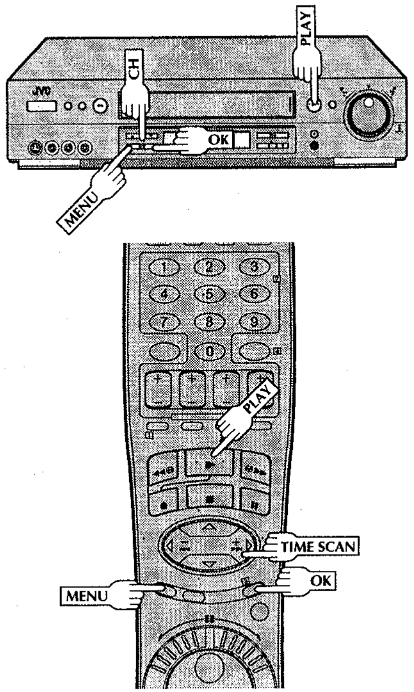
5 RETURN TO NORMAL SCREEN

Press **MENU**.

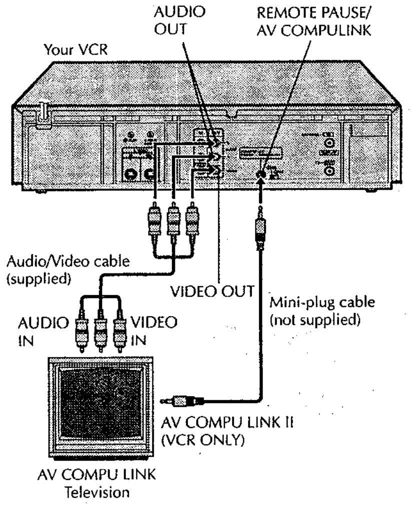
NOTES:

- *If you set "CA RECORD" to "ON" while recording is in progress, the VCR will mark an index code at that location.*
- *You cannot change the "CA PLAYBACK" setting during Commercial Advance fast-motion playback.*
- *While recording is in progress with "CA RECORD" set to "ON", you cannot mark an index code manually, nor change the recording tape speed.*
- *During playback with "CA PLAYBACK" set to "OFF", pressing* **SKIP SEARCH** *starts fast-motion playback for 30 seconds on the counter (☞ pg. 26).*
- *If there is a power outage while recording is in progress with "CA RECORD" set to "ON", commercials that are recorded after the power is restored may not be detected properly.*
- *If you want to stop recording when "CA RECORD" is set to "ON", be sure to press* **STOP**. *If you press* **POWER** *or* **TIMER** *to stop recording, that may affect detection accuracy for commercials recorded afterwards.*

U.S. Pat. No. 5,333,091



Example


Your VCR
AUDIO OUT
REMOTE PAUSE/ AV COMPULINK
Audio/Video cable (supplied)
VIDEO OUT
Mini-plug cable (not supplied)
AUDIO IN
VIDEO IN
AV COMPU LINK II (VCR ONLY)
AV COMPU LINK Television

AV COMPU LINK Playback

Your VCR is compatible with JVC's AV COMPU LINK components, including amplifiers (or receivers) and televisions. AV COMPU LINK provides one touch control of the audio and video components that are linked via their AV COMPU LINK connectors.

For example: simply load a cassette in the VCR and press **PLAY** and the AV COMPU LINK components automatically power on, the TV's AV mode is selected and the VCR goes into play mode. (**PLAY** does not need to be pressed if the cassette's record safety tab is removed.)

1 MAKE CONNECTION

Connect your VCR to an AV COMPU LINK component as shown in the illustration in the left column.

- The mini-plug cable is a mono 3.5 mm mini-plug to mono 3.5 mm mini-plug connector.

2 ACCESS MAIN MENU SCREEN

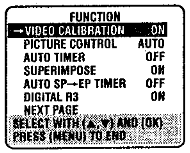
Press **MENU**.

3 ACCESS FUNCTION SET SCREEN

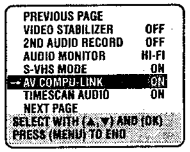
Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **TIME SCAN** ▷.

4 ENABLE AV COMPU LINK PLAYBACK

Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "AV COMPU-LINK", then press **OK** or **TIME SCAN** ▷ to set to "ON".



```
         FUNCTION
→VIDEO CALIBRATION      ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 SUPERIMPOSE            ON
 AUTO SP→EP TIMER      OFF
 DIGITAL R3             ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```



```
 PREVIOUS PAGE
 VIDEO STABILIZER      OFF
 2ND AUDIO RECORD      OFF
 AUDIO MONITOR       HI-FI
 S-VHS MODE             ON
→AV COMPU-LINK          ON
 TIMESCAN AUDIO         ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

5 RETURN TO NORMAL SCREEN

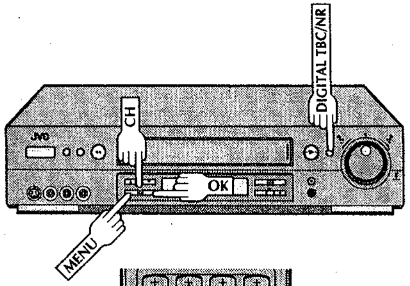
Press **MENU**.

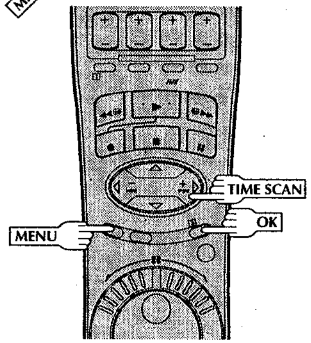
6 PERFORM AV COMPU LINK PLAYBACK

Simply insert a cassette and press **PLAY** (if the cassette's record safety tab has been removed, playback begins automatically). Linked components are turned on, and the TV set to its AV mode, automatically!

NOTE:

Connection varies depending on the type of JVC TV you have. Please refer to the TV's instruction manual when making this connection.





Digital TBC/NR

Your VCR is equipped with the Digital TBC (Time Base Corrector) that removes jitter from fluctuating video signals to deliver a stable picture even with old tapes and rental cassettes. The on/off of Digital 3-DNR (Noise Reduction) which cuts noise and enables clear picture reproduction is also linked to this function.
* The default setting is "ON".

We recommend that you use the Digital TBC feature when...
... playing back a tape recorded on a camcorder.
... playing back a tape repeatedly used.
... using this VCR as the player for editing.

1 SELECT DIGITAL TBC/NR SET MODE

Press **DIGITAL TBC/NR** so that the button lights up.

- Pressing the button again turns off this function.

NOTES:

- *If you play back a tape recorded under poor TV reception condition, there may be cases where the picture becomes more stable with Digital TBC/NR set to off.*
- *When Digital TBC/NR is set to on, if you play back a tape where certain types of signals are recorded (using a PC or some character generators), the playback picture may be distorted. If this is the case, turn off Digital TBC/NR.*
- *Digital TBC/NR and Video Stabilizer (☞ pg. 29) cannot be used at the same time; if you turn on Digital TBC/NR when "VIDEO STABILIZER" is set to "ON", Video Stabilizer will be automatically turned "OFF". Make sure Digital TBC/NR is off when you want to use Video Stabilizer.*

Digital R^3

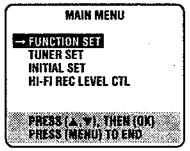
Digital R^3 picture system applies edge correction to the luminance signal to enhance detail.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

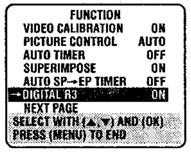
Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.



```
MAIN MENU
→FUNCTION SET
 TUNER SET
 INITIAL SET
 HI-FI REC LEVEL CTL
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END
```

3 SELECT DIGITAL R3 SET MODE

Move the highlight bar (arrow) to "DIGITAL R3" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "ON".



```
FUNCTION
 VIDEO CALIBRATION      ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 SUPERIMPOSE            ON
 AUTO SP→EP TIMER      OFF
→DIGITAL R3             ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4 RETURN TO NORMAL SCREEN

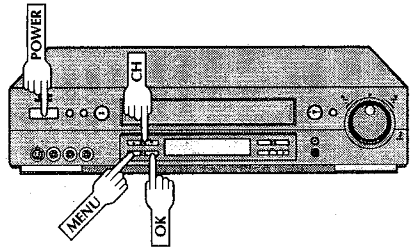
Press **MENU**.

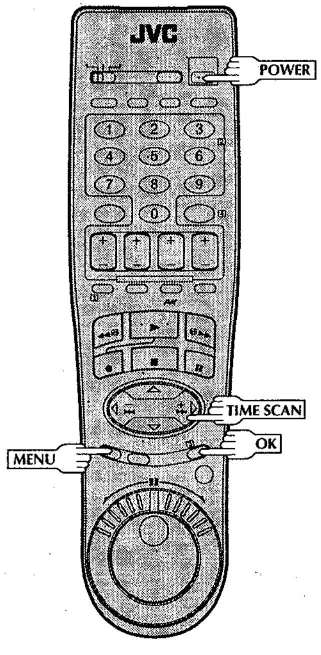
NOTES:

- *Normally it is recommendable to keep "DIGITAL R3" set to "ON".*
- *Depending on the type of tape being used, picture quality may be better with "DIGITAL R3" set to "OFF".*
- *If you use this VCR as the player for editing, be sure to set "DIGITAL R3" to "OFF" before starting.*

Active Video Calibration

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





Active Video Calibration checks the condition of the tape during recording and playback, and compensates for poor reproduction to provide the best quality recording and playback pictures. *The default setting is "ON".

Preparation

1 TURN ON THE VCR

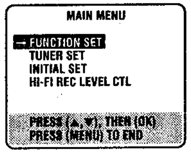
Press **POWER**.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS FUNCTION SET SCREEN

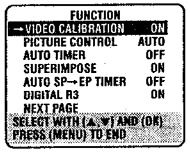
Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **TIME SCAN** ▷.



```
MAIN MENU
→FUNCTION SET
 TUNER SET
 INITIAL SET
 HI-FI REC LEVEL CTL
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END
```

4 SELECT VIDEO CALIBRATION MODE

Press **CH ▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "VIDEO CALIBRATION", then press **OK** or **TIME SCAN** ▷ to set to "ON" or "OFF".



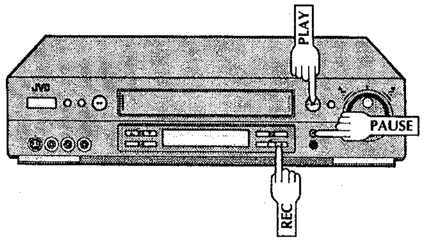
```
FUNCTION
→VIDEO CALIBRATION      ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 SUPERIMPOSE            ON
 AUTO SP→EP TIMER      OFF
 DIGITAL R3             ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

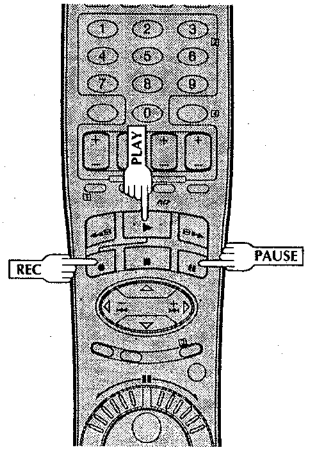
NOTE:

When recording or when playing back tapes recorded on this VCR set the Video Calibration to "ON".

5 RETURN TO NORMAL SCREEN

Press **MENU**.





Playback

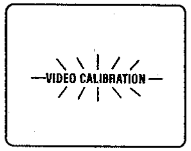
The VCR assesses the quality of the tape once you start playback.

Perform steps **1** and **2** on page 21 ("Simple Playback") before continuing.

1 START PLAYBACK

Press **PLAY**.

- The VCR adjusts the playback picture quality based on the quality of the tape in use.



NOTES:

- *When using rental tapes, or tapes recorded on other VCRs, set "VIDEO CALIBRATION" in step **4** of the Preparation procedure to either "ON" or "OFF" as desired to give the best picture (☞ pg. 35).*
- *The Video Calibration screen only appears at the beginning of automatic tracking. Even though the screen doesn't appear after that, the Video Calibration function is operative.*
- *To display the Video Calibration screen, "SUPERIMPOSE" must be set to "ON" or the Video Calibration screen will not appear (☞ pg. 23).*

Recording

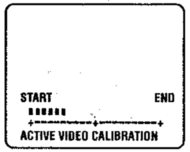
Perform steps **1** – **3** on page 22 ("Simple Recording") before continuing.

1 START RECORDING

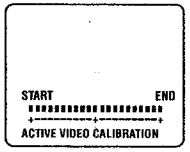
Press and hold **REC** and press **PLAY** on the remote control, or press **REC** on the VCR's front panel.

- The VCR takes about 7 seconds to assess the quality of the tape in use, then recording begins with the picture level optimized.

DURING CALIBRATION



CALIBRATION COMPLETE



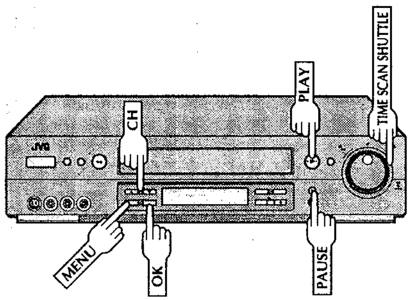
NOTES:

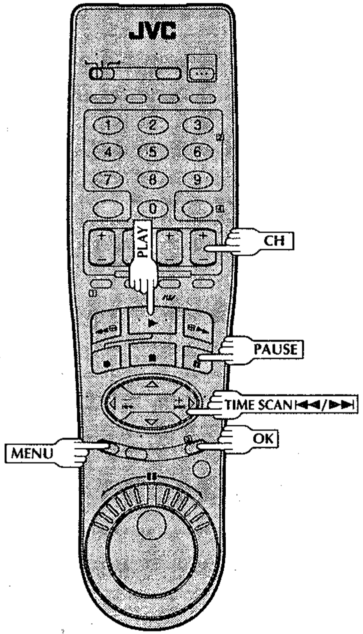
- *Calibration occurs immediately prior to both the first SP and the first EP recording after inserting the cassette. It does not take place during recording.*
- *In the case of timer recording, calibration takes place for both SP and EP before the first timer recording after inserting the cassette (regardless of the tape speed selected for that recording).*
- *Once the cassette is ejected, the calibration data is canceled. The next time the cassette is used for recording, calibration is re-performed.*
- *While Video Calibration is operative, the* **PAUSE** *button will not function.*
- *To display the Video Calibration screen, "SUPERIMPOSE" must be set to "ON" or the Video Calibration screen will not appear (☞ pg. 23).*

ATTENTION

- ■ As calibration takes place before recording actually starts, there is a delay of about 7 seconds after **REC** and **PLAY** on the remote, or **REC** on the VCR's front panel, are pressed. To make sure you record the desired scene or program completely, first perform the following steps:
  1) Press and hold **PAUSE**, and press **REC** to engage the RECORD PAUSE mode.
     - The VCR then automatically checks the condition of the tape and, after about 7 seconds, re-enters RECORD PAUSE.
  2) Press **PLAY** to start recording.
- ■ If you want to bypass Video Calibration and start recording right away, set "VIDEO CALIBRATION" to "OFF" in step **4** of the Preparation procedure (☞ pg. 35).

TimeScan





Your VCR is equipped with the TimeScan function. TimeScan allows noise free pictures to be displayed on your TV screen in the forward and reverse search modes. Audio will be played back at normal speed during any of the TimeScan modes (☞ pg. 38). TimeScan allows you to view a program in search mode while listening to the audio.

NOTES:

- *"TIMESCAN AUDIO" must be set to "ON", or the sound will not be heard in TimeScan mode (☞ pg. 38).*
- *The audio will not synchronize with the video in TimeScan modes.*
- *During 1.5x speed TimeScan the audio playback speed will also be 1.5 times normal, so dialog will sound fast-talking.*
- *In Pause mode 3 seconds (approx.) of audio will be played back repeatedly. (☞ pg. 24)*
- *In TimeScan search modes some of the audio information will not be played so that the audio can keep up with the video.*

Audio signal during TimeScan

Playback tape	①	②	③	④	⑤

Sound of ①, ③ and ⑤ is heard.
Sound of ② and ④ is not heard.
Output audio signal is normal (monaural) sound.

Variable-Speed Search/ Reverse Motion Playback

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the VCR's **TIME SCAN SHUTTLE** ring. It remains at that position even after you release it. Each time it passes a click position, the playback speed changes.

OR

During playback or still, repeatedly press and release **TIME SCAN ⏮** or **⏭** to select the search speed. (Refer to the chart on page 38 for playback speeds).

- To increase the speed in the forward direction, press and release ⏭ repeatedly to select the various forward search modes.
- To decrease the speed in the forward direction, press and release ⏮.
- To play in reverse slow motion, and in reverse play mode, continue to press ⏮ repeatedly after selecting all the forward slow motion modes. (Refer to the chart on page 38 for playback speeds).

To resume normal playback, press **PLAY**.

If the superimposed indication jitters vertically during TimeScan, adjust until the optimum condition is achieved by using manual tracking (☞ pg. 26).

TimeScan

Names of special-effects playback	Reverse							Forward							
	Search			Play	Slow-Motion (Pro-Slow)**		Still*	Slow-Motion (Pro-Slow)**		Play	Search				
Speed	-7x	-5x	-3x	-1x	-1/2x	-1/3x	0	1/3x	1/2x	1x	1.5x	2x	3x	5x	7x
Audio output	Audio is output.				Audio is not output.		Audio is output.	Audio is output.		Audio is output.					

* Still mode cannot be engaged using the **TIME SCAN** buttons. Still mode can only be engaged by pressing the **PAUSE** button.

** Smooth slow motion delivering an uninterrupted moving image without distortion.

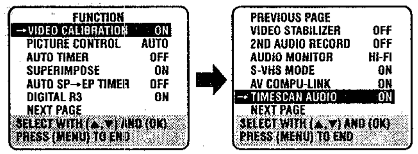
- When the Superimpose function is "ON", the speed is displayed on the upper right corner of the TV screen for approx. 5 seconds.
- The TimeScan search speed is the same for SP and EP recordings.
- To resume normal playback, press **PLAY**.
- When using the VCR's **TIME SCAN SHUTTLE** ring, the playback speed may not change depending on how far it is turned.
- When using the VCR's **TIME SCAN SHUTTLE** ring, the playback speed will change up to 7x and –7x search speeds. Turning the **TIME SCAN SHUTTLE** ring further will not increase the search speed.
- Picture may be distorted at the position where the recording speed is switched.
- The picture may be noisy for a moment when you change the playback speed.
- During high-speed search with a tape containing both SP and EP recordings, the search speed will change automatically to 7x normal playback speed with TimeScan when the recording tape speed switches from EP to SP.
- Depending on the tape in use, noise may appear or the upper part of the picture may be distorted.
- Picture may appear distorted in comparison to normal playback.
- In TimeScan mode there will be a time lag between the video and the audio, and noise may appear in the audio signal.
- TimeScan sound quality will differ in comparison to normal playback.
- When material such as music videos where there is non-stop sound (very few breaks in the soundtrack) are viewed at 2x normal speed, the audio playback may be faster than normal.
- When the playback direction is reversed, it takes approximately 6 seconds until sound is heard.
- ±1/3x slow-motion playback is possible with SP recordings only.
- Depending on the type of tape contents, the sound may not be clear during forward slow-motion playback.
- Pro-Slow cannot be activated by pressing **PAUSE** for longer than 2 seconds.
- Depending on the type of tape in use, noise may appear during Pro-Slow. When this happens, try manual tracking (☞ pg. 26).
- The operations by the remote control's **JOG** dial/**SHUTTLE** ring do not include TimeScan; noise will appear on the screen and audio will not be output.

If you don't want to hear TimeScan audio, set "TIMESCAN AUDIO" to "OFF".

TimeScan Audio

The audio output can be set ON/OFF during TimeScan. Select ON/OFF as required. *The default setting is "ON".

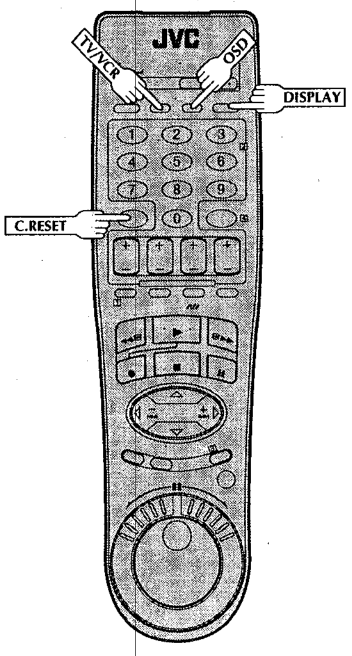
1. Press **MENU** to access the Main Menu screen.
2. Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN**△▽, then press **OK** or **TIME SCAN** ▷.
3. Move the highlight bar (arrow) to "TIMESCAN AUDIO" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN**▷ to select to "ON" or "OFF".
4. Press **MENU** to return to the normal screen.



```
FUNCTION
→VIDEO CALIBRATION    ON
 PICTURE CONTROL    AUTO
 AUTO TIMER          OFF
 SUPERIMPOSE          ON
 AUTO SP→EP TIMER    OFF
 DIGITAL R3           ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

```
 PREVIOUS PAGE
 VIDEO STABILIZER       OFF
 2ND AUDIO RECORD       OFF
 AUDIO MONITOR        HI-FI
 S-VHS MODE              ON
 AV COMPU-LINK           ON
→TIMESCAN AUDIO          ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

Recording Features



Record One Program While Watching Another

1 ENGAGE TV MODE

During recording...

- Press **TV/VCR**. The VCR's VCR indicator goes out. (If you are using the RF connection (☞ pg. 6) to view the output from your VCR, the TV broadcast being recorded disappears.)
- If you are using the AV connection (☞ pg. 6) to view the output from your VCR, change the TV's input mode from AV to TV.

2 SELECT CHANNEL FOR VIEWING

Use the TV's channel selector to set the channel you want to watch.

Display Elapsed Recording Time

1 RESET COUNTER TO ZERO

Before recording starts, press **C.RESET**. The counter resets to zero and displays the exact elapsed time as the tape runs.

2 DISPLAY ELAPSED TIME ON SCREEN

During recording, press **OSD** at any time to see the elapsed time.
All indications corresponding to the current status of the VCR are displayed for 5 seconds. The counter display remains on the screen indicating the elapsed time.
Press **OSD** again to remove the display.

- Make sure "SUPERIMPOSE" is set to "ON" (☞ pg. 23).
- The indications are not recorded.
- Press **DISPLAY** to change to the COUNT display if "REMAIN" is displayed.

Display Tape Remaining Time

1 DISPLAY COUNTER INFORMATION

Press **OSD**.
All indications corresponding to the VCR's current status are displayed for 5 seconds. The counter display remains on the screen indicating the elapsed time.

2 DISPLAY TAPE REMAINING TIME

Press **DISPLAY** until "REMAIN" appears on screen. The approximate tape remaining time appears on the TV screen and also on the VCR display panel with a "▶" indicator.

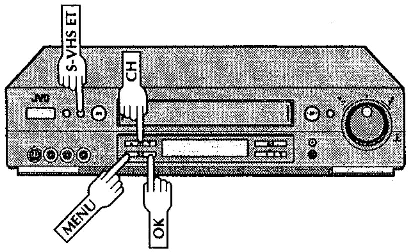
- The tape remaining time is calculated based on the tape speed (SP or EP) being used. The indicated remaining time is only an estimate.
- Press **DISPLAY** to change the on-screen display from "REMAIN" to "COUNT" and vice versa; and to show counter reading, channel number, clock time or tape remaining time on the front display panel. Then channel number will not be displayed when the VCR is playing a tape.

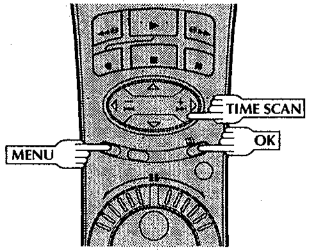
3 EXIT THE DISPLAY

Press **OSD** again.

NOTES:

- *"SUPERIMPOSE" must be set to "ON", or the on-screen display will not appear (☞ pg. 23).*
- *Near the beginning of the tape, the tape remaining estimate may be inaccurate. However, the estimate becomes more accurate as the tape comes closer to the end.*
- *Depending on the type of tape used, the tape remaining time reading may not appear right away, or may not be correct. "- -:- -" may sometimes appear, or the display may blink on occasion.*
- *The tape remaining time indication is not accurate when using VHS-C tapes with VHS-C adapter.*





S-VHS (Super VHS), S-VHS ET and VHS

Your VCR can record in S-VHS, S-VHS ET or VHS.

S-VHS allows you to make high quality video recordings with a horizontal resolution of 400 lines. This compares with the 240 lines of resolution of normal VHS recordings. To achieve the highest quality picture we recommend that you record in S-VHS mode.

By using S-VHS ET it is possible to record and play back with S-VHS picture quality on VHS cassettes with this VCR. For details, refer to page 41.

To record in S-VHS;
- perform the steps **1 – 4** below to set the "S-VHS MODE" to "ON".
- then, insert a cassette marked "S-VHS", the S-VHS indicator will light on the display panel.

The S-VHS recording mode will be automatically selected.

To record in S-VHS ET on a VHS high grade cassette;
- press **S-VHS ET** and set to "ON".

☞ "Super VHS ET" on page 41.

To record in VHS;
- insert a cassette marked "VHS".
- press **S-VHS ET** and set to "OFF".

The VHS recording mode will be automatically selected regardless of the S-VHS mode setting.

To record in VHS on an S-VHS cassette;
- insert the cassette marked "S-VHS", the S-VHS indicator will light on the display panel.
- then, perform the steps **1 – 4** below to set the "S-VHS MODE" to "OFF"; the S-VHS indicator will go out.

The VHS recording mode will be selected.

NOTE:

Tapes recorded in S-VHS or S-VHS ET mode can not be played back successfully on normal VHS VCRs.

1 ACCESS MAIN MENU SCREEN

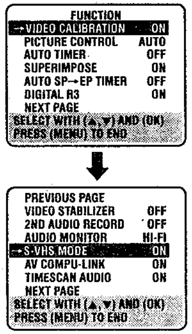
Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN△▽**, then press **OK** or **TIME SCAN ▷**.

3 SELECT S-VHS MODE

Move the highlight bar (arrow) to "S-VHS MODE" by pressing **CH▲▼** or **TIME SCAN△▽**, then press **OK** or **TIME SCAN ▷** to set to "ON" or "OFF".



```
        FUNCTION
→VIDEO CALIBRATION     ON
 PICTURE CONTROL     AUTO
 AUTO TIMER           OFF
 SUPERIMPOSE           ON
 AUTO SP→EP TIMER     OFF
 DIGITAL R3            ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

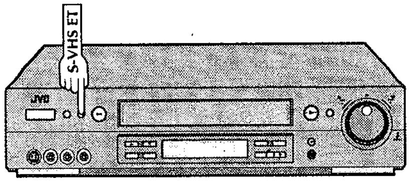
```
 PREVIOUS PAGE
 VIDEO STABILIZER     OFF
 2ND AUDIO RECORD     OFF
 AUDIO MONITOR      HI-FI
→S-VHS MODE            ON
 AV COMPU-LINK         ON
 TIMESCAN AUDIO        ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTE:

When playing back a tape that has been recorded in S-VHS or S-VHS ET, the S-VHS indicator lights on the display panel regardless of the "S-VHS MODE" setting.



Super VHS ET

Your VCR is equipped with Super VHS ET that makes it possible to record with S-VHS picture quality on VHS cassettes.

1 SELECT S-VHS ET SET MODE

Press **S-VHS ET**. The button lights up.

- The "S-VHS" indicator lights on the front display panel.
- To disengage the S-VHS ET mode, press **S-VHS ET**. The button's light goes off.

NOTES:

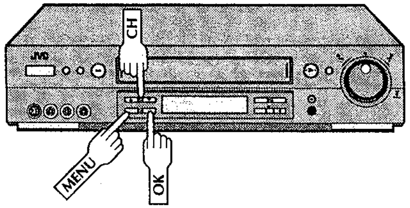
- *You cannot activate the S-VHS ET function...*
  - *...while recording is in progress.*
  - *...while timer-recording (incl. Instant Timer Recording ☞ pg. 52) is in progress.*
  - *...while Video Calibration (☞ pg. 35) is in progress.*
  - *...when the VCR's power is off.*
- *S-VHS ET does not work with S-VHS tapes.*

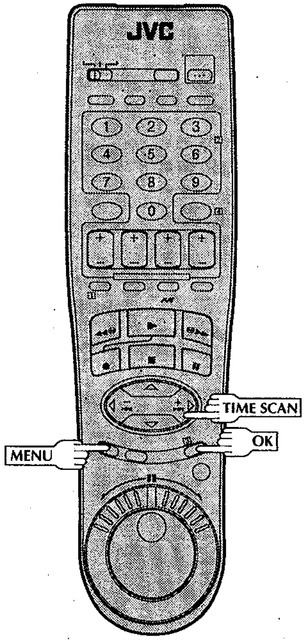
S-VHS ET

This facility allows recording with S-VHS picture quality on VHS cassettes. You can play back those cassettes recorded in S-VHS ET on a VCR equipped with S-VHS ET.

NOTES:

- *To obtain the highest quality recording and playback pictures over a longer period on this model, S-VHS recording on S-VHS tape is recommended.*
- *You can play back S-VHS ET recordings not only on this VCR but also on another VHS VCR equipped with S-VHS ET.*
  ** It is recommended to specifically label S-VHS ET recordings so you can easily distinguish them from regular VHS recordings.*
- *S-VHS ET recordings can also be played back on an S-VHS VCR or a VHS VCR equipped with SQPB (S-VHS QUASI PLAY-BACK) function. However, there may be cases where S-VHS ET playback is not possible on a particular VCR.*
- *Frequent still, frame-by-frame and slow-motion playback may damage the tape and cause picture degradation.*
- *With some tapes, better picture quality may not be obtained even with S-VHS ET recording. It is recommended that you do test record beforehand to make sure whether better results can be obtained.*
- *High Grade tapes are recommended for superior results.*
- *Make sure that "VIDEO CALIBRATION" is set to "ON" at the Function screen (☞ pg. 35).*
- *During S-VHS ET playback, noise may appear depending on tape quality.*
- *Noise may appear during still, frame-by-frame, slow-motion playback and TimeScan search.*
- *If the playback picture becomes blurred or interrupted, use a cleaning cassette.*





NOTES:

- *If a SAP program is received and "2ND AUDIO RECORD" is set to "ON", the SAP audio is recorded on both the Normal and Hi-Fi tracks. The main audio program is not recorded.*
- *If a non-SAP program is received, the main audio is recorded on both the Hi-Fi and Normal audio tracks.*

Stereo And SAP (Second Audio Program)

Your VCR's built-in MTS decoder enables reception of Multi-channel TV Sound broadcasts.
When the channel is changed on the VCR ...

- The "STEREO" indication appears on the screen for about 5 seconds if the program is a stereo broadcast.
- The "SAP" indication appears on the screen for about 5 seconds if the program is a SAP broadcast.
- Both indications appear when a stereo program is accompanied by SAP audio.

To Record Stereo Programs . . .
. . . simply follow the basic recording procedure.

To Listen To Stereo Soundtrack During Recording . . .
. . . set "AUDIO MONITOR" to "HI-FI" at the Function screen (☞ pg. 29).

To Record SAP Programs . . .

1 ACCESS MAIN MENU SCREEN

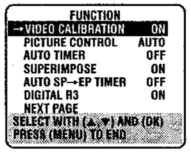
Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

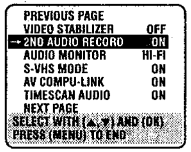
Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 SELECT 2ND AUDIO RECORD SET MODE

Move the highlight bar (arrow) to "2ND AUDIO RECORD" by pressing **CH▲▼** or **TIME SCAN**△▽, then press **OK** or **TIME SCAN** ▷ to set to "ON".



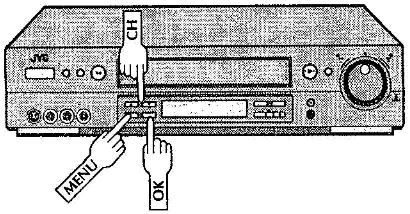
```
          FUNCTION
→VIDEO CALIBRATION        ON
 PICTURE CONTROL        AUTO
 AUTO TIMER              OFF
 SUPERIMPOSE              ON
 AUTO SP→EP TIMER        OFF
 DIGITAL R3               ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

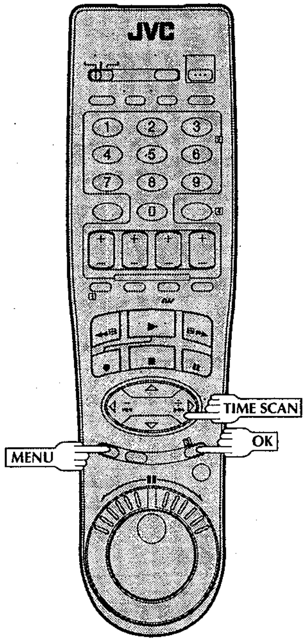


```
 PREVIOUS PAGE
 VIDEO STABILIZER        OFF
→2ND AUDIO RECORD         ON
 AUDIO MONITOR         HI-FI
 S-VHS MODE               ON
 AV COMPU-LINK            ON
 TIMESCAN AUDIO           ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4 RETURN TO NORMAL SCREEN

Press **MENU**.





Hi-Fi Audio Recording Level Control

Your VCR allows manual adjustment of the Hi-Fi audio recording level.

1 ACCESS MAIN MENU SCREEN

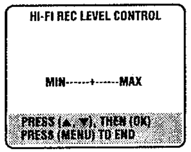
Press **MENU**.

2 ACCESS HI-FI REC LEVEL CONTROL SCREEN

Move the highlight bar (arrow) to "HI-FI REC LEVEL CTL" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 ADJUST AUDIO RECORDING LEVEL

Press **TIME SCAN** △ or ▽.



```
   HI-FI REC LEVEL CONTROL


     MIN------+------MAX


PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END
```

- To move the on-screen's audio levels by one division of the scale, press **TIME SCAN** △ or **TIME SCAN** ▽ briefly for 5 times in succession. To move the audio levels faster, keep **TIME SCAN** △ or **TIME SCAN** ▽ presssed.
- Adjust the recording level while watching the VCR's audio level meters. Set the level so that maximum volume causes the meters to vary between 0dB to 4dB.

4 RETURN TO NORMAL SCREEN

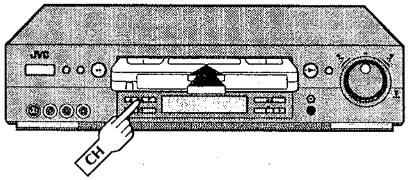
Press **MENU**.

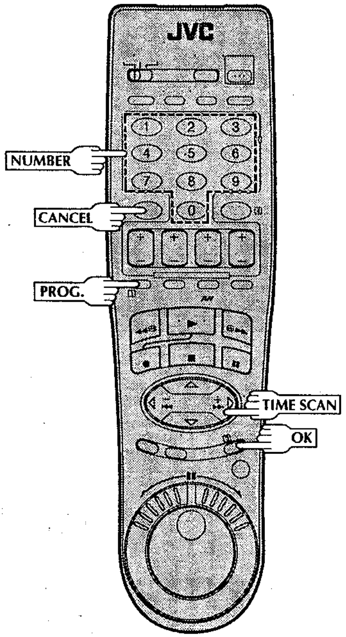
NOTES:

- *Noise will increase if the recording level is too low, while distortion will increase if the level is too high.*
- *When you finished HiFi Audio recording, be sure to set the level control back to its center position.*

VCR Plus+ Timer Programming

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





Timer recording allows you to program the VCR to automatically record a program that will be broadcast at some future time.
The timer record function can be programmed using VCR Plus+ or Express Timer programming up to 8 shows as far as a year in advance. (☞ pg. 44 or 48)
The VCR Plus+ timer programming system eliminates the need to input channel, date, start and stop time data when setting the timer record function. Simply key in the PlusCode number for the TV program you wish to record and the VCR's timer will be automatically programmed. (The PlusCode programming numbers are the numbers next to the program in most TV listing.)

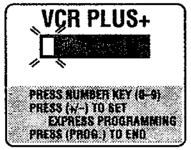
1 LOAD A CASSETTE

Make sure the record safety tab is present.

- The VCR's power comes on automatically.

2 ACCESS VCR PLUS+ SCREEN

Press **PROG.** on the remote control.

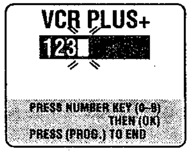

VCR PLUS+

PRESS NUMBER KEY (0–9)
PRESS (+/–) TO SET
EXPRESS PROGRAMMING
PRESS (PROG.) TO END

- The clock must be set in order to access the VCR Plus+ screen. If you haven't set the clock, the Main Menu screen appears after an error message is displayed.
Refer to page 8 for the Plug & Play procedure or page 10 for the clock setting procedure.

3 ENTER PLUSCODE NUMBER

Press the appropriate **NUMBER** keys to enter the PlusCode number printed in the TV listings for the TV program you wish to record and press **OK**.
If the Guide Channel Set screen appears, go to step ***4.***
If the VCR Plus+ program screen appears, go to step ***5.***

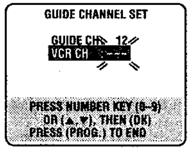

VCR PLUS+
123

PRESS NUMBER KEY (0–9)
THEN (OK)
PRESS (PROG.) TO END

- To make corrections, press **CANCEL** and input the correct PlusCode number.

4 INPUT RECEIVING CHANNEL NUMBER

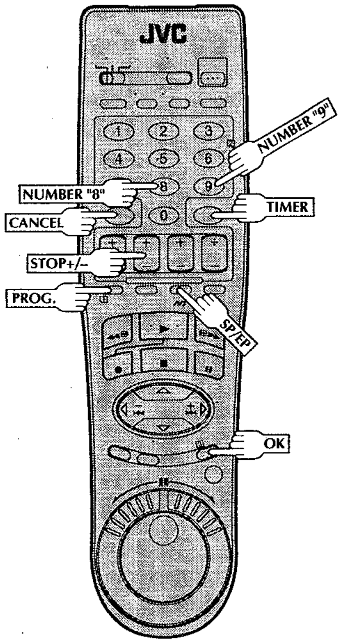
The Guide Channel Number, which is assigned to the TV or cable station for the PlusCode number that you entered in step **3**, will appear automatically on the Guide Channel Set screen. Input the number of the channel on which the broadcast for the PlusCode number is received on the VCR or cable box using the **NUMBER** keys, **CH ▲▼** or **TIME SCAN** △▽, then press **OK**.


GUIDE CHANNEL SET

GUIDE CH 12
VCR CH – – –

PRESS NUMBER KEY (0–9)
OR (▲,▼), THEN (OK)
PRESS (PROG.) TO END

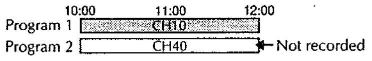
- The Guide Channel Set screen appears only when you input the PlusCode number of a station for which the Guide Channel number has not previously been set.
- If you receive your channels with a cable box and if you have properly set your Controller, "CABLE CH" appears in place of "VCR CH". If not, refer to pages 15 – 17.



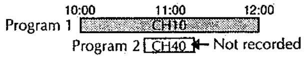
ATTENTION

If there is a conflict in the timer schedule and one program overlaps with another, only the parts shown below in gray will be recorded.

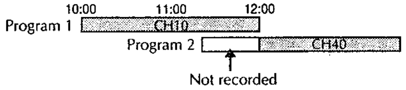
Pattern 1: *The program with the lower program number will be recorded.*



Pattern 2: *The program that is broadcast earlier will be recorded.*

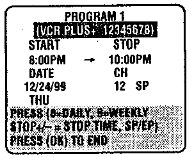


Pattern 3: *The program that is broadcast earlier will be recorded, followed by the remaining portion of the other program.*



5 CHECK PROGRAM DATA

The PlusCode number you entered and the matching Timer-Recording information is displayed on the Program screen. Check to make sure it's accurate.


PROGRAM 1
(VCR PLUS+ 12345678)
START → STOP
8:00PM → 10:00PM
DATE CH
12/24/99 12 SP
THU
PRESS (8=DAILY, 9=WEEKLY
STOP+/– = STOP TIME, SP/EP)
PRESS (OK) TO END

- To change the stop time, press **STOP +/–**.
- To timer-record daily or weekly serials, press **DAILY** (**NUMBER** key "8") or **WEEKLY** (**NUMBER** key "9"). "DAILY" or "WEEKLY" appears on the Program screen. Pressing the button again makes each corresponding display disappear.
- If you made a mistake, press **CANCEL** to access the VCR Plus+ screen again and input the correct PlusCode number.
- If the PlusCode number you inputted is incorrect, "ERROR" may appear on the screen to advise you of the error. This happens when the PlusCode number is for a program which has already passed. "ERROR" is displayed for about 5 seconds and the VCR Plus+ screen reappears.

6 SET TAPE SPEED

Press **SP/EP**.

7 RETURN TO NORMAL SCREEN

Press **PROG.** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

8 ENGAGE TIMER MODE

Press **TIMER**. The VCR turns off automatically and "⏲" is displayed on the display panel.

IMPORTANT

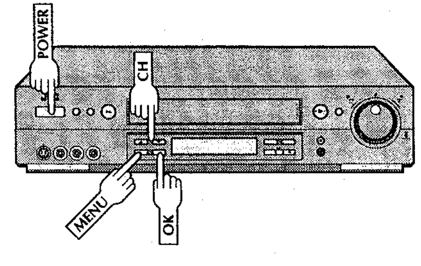
If you have moved to a different area or if a broadcasting station's channel number has been changed, the wrong VCR or CABLE CH number will be displayed on the VCR Plus+ program screen in step **5**. When this happens, set the correct the Guide Channel number for that station. (☞ pg. 46, "VCR Plus+ Setup")

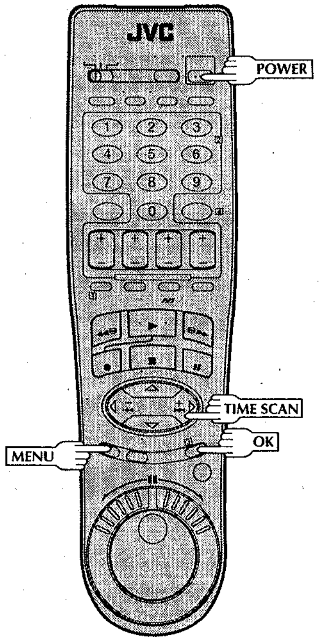
NOTES:

- *To disengage the timer before recording starts, press* **TIMER** *again. Pressing once more re-engages it.*
- *In case of a power failure after programming, the VCR's memory backup keeps your selections for approximately 10 minutes.*
- *When timer-recording cable channels received through a Cable Box, be sure to keep the Cable Box set to ON.*

VCR Plus+ Setup

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





IMPORTANT

If you have moved to a different area or if a broadcasting station's channel number has been changed, the wrong VCR or CABLE CH number will be displayed on the VCR Plus+ program screen (☞ step 5 on page 45). When this happens, perform the following steps to set the correct the Guide Channel number for that station.

To ensure that VCR Plus+Timer Recording operates correctly it is necessary to set the VCR Plus+ "Guide Channel Set" for each station. Please read the following information carefully.

VCR Plus+ Guide Channel Matching

VCR Plus+ programming system assigns a VCR Plus+ "Guide Channel" to broadcast and cable TV channels. These Guide Channel numbers are also called the VCR Plus+ Channel Codes. Most TV listings have a section, usually a chart, indicating the "Guide Channel" numbers assigned to each station. For accurate VCR Plus+ programming the VCR Plus+ Guide Channel number for each station should match the channel number on which it is received in your area.

NOTES:

- *In many instances the VCR Plus+ Guide Channel numbers for cable and broadcast TV stations **DO NOT** match the channel number on which it is received by your VCR or cable box. Check your TV listing, or contact your cable supplier for details.*
- *Many broadcast TV stations can be viewed on cable. Check your TV listing, or contact your cable supplier for details.*

1 TURN ON THE VCR

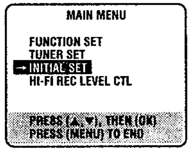
Press **POWER**.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS INITIAL SET SCREEN

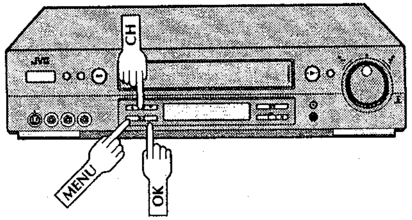
Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "INITIAL SET", then press **OK** or **TIME SCAN** ▷.

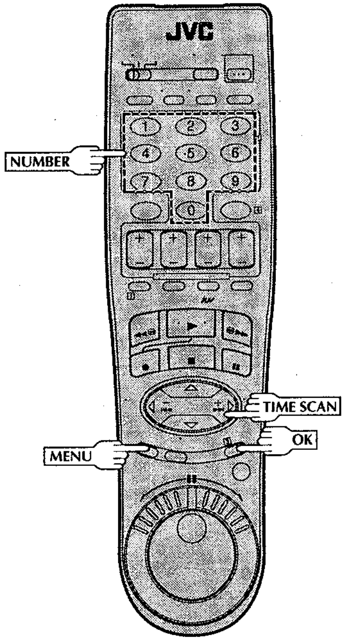


MAIN MENU

FUNCTION SET
TUNER SET
→ INITIAL SET
HI-FI REC LEVEL CTL

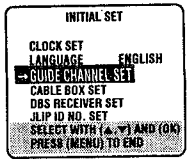
PRESS (▲,▼), THEN (OK)
PRESS (MENU) TO END





4 ACCESS GUIDE CHANNEL SET SCREEN

Press **CH▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "GUIDE CHANNEL SET", then press **OK** or **TIME SCAN** ▷.



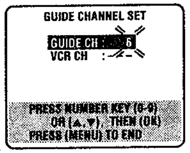
INITIAL SET

CLOCK SET
LANGUAGE ENGLISH
→ GUIDE CHANNEL SET
CABLE BOX SET
DBS RECEIVER SET
JLIP ID NO. SET
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END

5 INPUT GUIDE CHANNEL NUMBER

Press **CH▲▼**, **TIME SCAN** △▽ or the appropriate **NUMBER** keys to input the VCR Plus+ Guide Channel number as shown in the TV listing. Then press **OK** or **TIME SCAN** ▷.

(Ex.) When inputting the Guide Channel number 6 for WNJU(Ind.)



GUIDE CHANNEL SET

GUIDE CH : 6
VCR CH : – –

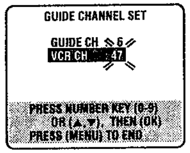
PRESS NUMBER KEY (0-9)
OR (▲,▼), THEN (OK)
PRESS (MENU) TO END

- If you receive your channels with a cable box and if you have properly set your Controller, "CABLE CH" appears in place of "VCR CH". If not, refer to pages 15 – 17 and re-perform the procedure.

6 INPUT RECEIVING CHANNEL NUMBER

Press **CH▲▼**, **TIME SCAN** △▽ or the appropriate **NUMBER** keys to input the number of the channel on which the Guide Channel's broadcasts are received. Then press **OK** or **TIME SCAN** ▷.

(Ex.) If WNJU(Ind.) is received on channel 47



GUIDE CHANNEL SET

GUIDE CH 6
VCR CH 47

PRESS NUMBER KEY (0-9)
OR (▲,▼), THEN (OK)
PRESS (MENU) TO END

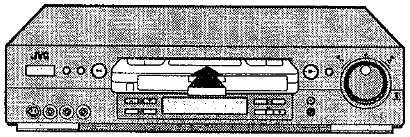
- Repeat steps **5** and **6** for each instance.

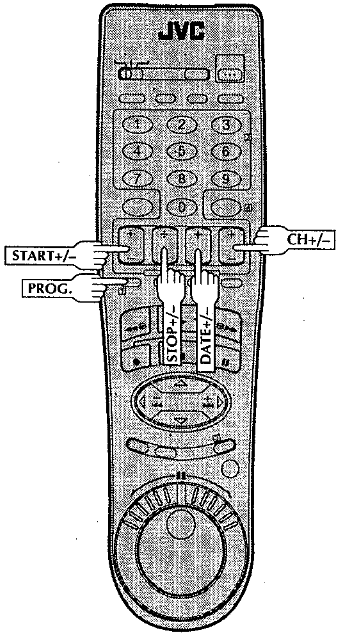
7 RETURN TO NORMAL SCREEN

Press **MENU**.

Express Timer Programming

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





You can directly program the VCR's timer to record up to 8 shows, as far as a year in advance. Remember, the clock must be set before you can program the timer (☞ pg. 8 or 10).

1 LOAD A CASSETTE

Make sure the record safety tab is intact. If not, cover the hole with adhesive tape, then load it into the VCR.

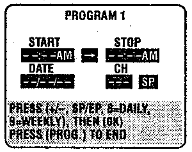
- The VCR comes on, and the counter is reset, automatically.

2 ACCESS VCR PLUS+ SCREEN

Press **PROG.**.

3 ACCESS PROGRAM SCREEN

Press **START +/–**. (If you're just starting out, "PROGRAM 1" appears.)

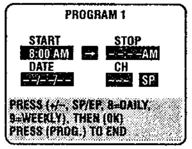


PROGRAM 1
START --:--AM → STOP --:--AM
DATE --/--/-- CH --- SP
PRESS (+/–, SP/EP, 8=DAILY, 9=WEEKLY), THEN (OK)
PRESS (PROG.) TO END

4 SET PROGRAM START TIME

Press **START +/–** to enter the time you want recording to start.

- Press and hold **START +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.



PROGRAM 1
START 8:00 AM → STOP --:--AM
DATE --/--/-- CH --- SP
PRESS (+/–, SP/EP, 8=DAILY, 9=WEEKLY), THEN (OK)
PRESS (PROG.) TO END

5 SET PROGRAM STOP TIME

Press **STOP +/–** to enter the time you want recording to stop.

- Press and hold **STOP +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.

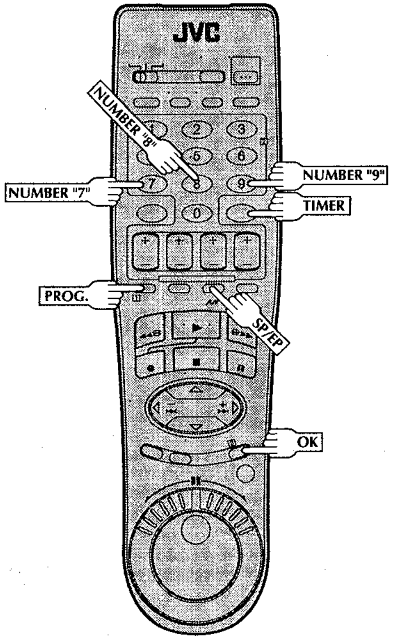
6 SET PROGRAM DATE

Press **DATE +/–**. (The current date is displayed on screen. The date you enter appears in its place.)

7 SET CHANNEL NUMBER

Press **CH +/–**.

- If you are using a DBS receiver, see "ATTENTION FOR DBS RECEIVER USERS" on next page.
- Holding down **CH +/–** rapidly scans through the channels.



8 SET TAPE SPEED

Press **SP/EP** to set the tape speed.

9 RETURN TO NORMAL SCREEN

Press **PROG.** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

10 ENGAGE TIMER MODE

Press **TIMER**. The VCR turns off automatically and "⏲" is displayed on the display panel.

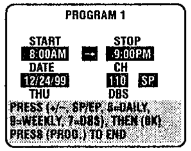
To Timer-Record Weekly Or Daily Serials . . .

. . . anytime during steps **3** through **9**, press **WEEKLY** (**NUMBER** "9") for weekly serials or **DAILY** (**NUMBER** "8") for daily serials (Monday–Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.

NOTES:

- *To disengage the timer before recording starts, press* **TIMER** *again. Pressing once more re-engages it.*
- *In case of a power failure after programming, the VCR's memory backup keeps your selections for approximately 10 minutes.*
- *Programs that start after midnight must have the next day's date.*
- *After timer recording is completed, the VCR's power goes off automatically.*
- *You can program the timer while a regular recording is in progress; the on-screen menu will not be recorded.*
- *If the end of tape is reached during timer recording, the cassette is automatically ejected.*
- *When timer-recording cable or satellite channels through an external tuner, be sure to keep the cable box or satellite receiver's power ON.*

ATTENTION FOR DBS RECEIVER USERS



PROGRAM 1
START 8:00AM → STOP 9:00PM
DATE 12/24/99 THU CH 110 DBS SP
PRESS (+/–, SP/EP, 8=DAILY, 9=WEEKLY, 7=DBS), THEN (OK)
PRESS (PROG.) TO END

If you are using a DBS receiver (unless "DBS RECEIVER SET" is set to "OFF" ☞ pg. 19), the BAND indication (TV or CATV or DBS) appears under the channel number display. If the channel number that has been entered requires that the band be set, "7=DBS" is displayed on the screen. Press the **NUMBER** key "7" to select the desired band.

a– TV : To timer-record a regular TV program received on the VCR.

b– CATV : To timer-record a cable TV program received on the VCR, or through a cable box (unless "CABLE BOX SET" is set to "OFF" ☞ pg.16).

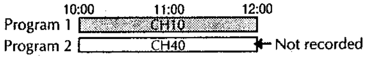
c– DBS : To timer-record a satellite program received through a DBS receiver.

- If "BAND" is set to "TV" at the Tuner Set screen (☞ pg.13) and "CABLE BOX SET" is set to "OFF" at the Cable Box Set screen (☞pg. 16), CATV will not be displayed on the Program screen; If "BAND" is set to "CATV" or "CABLE BOX SET" is set to "ON", TV will not be displayed.

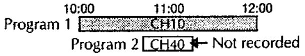
ATTENTION

If there is a conflict in the timer schedule and one program overlaps with another, only the parts shown below in gray will be recorded.

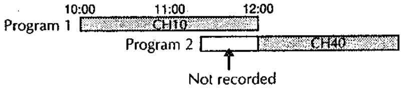
Pattern 1: *The program with the lower program number will be recorded.*

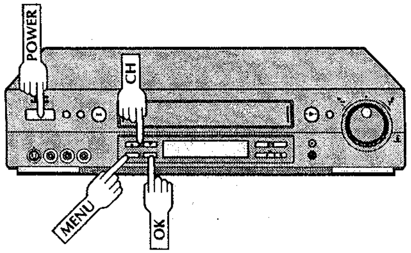


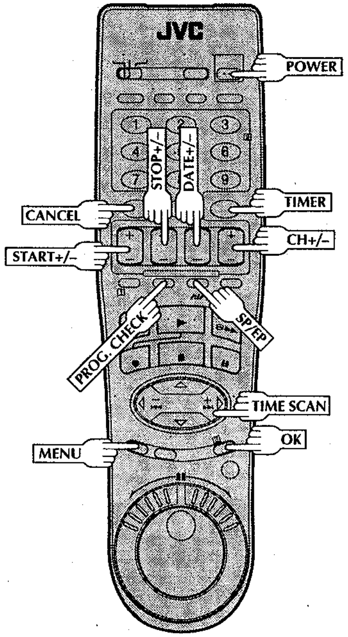
Pattern 2: *The program that is broadcast earlier will be recorded.*



Pattern 3: *The program that is broadcast earlier will be recorded, followed by the remaining portion of the other program.*







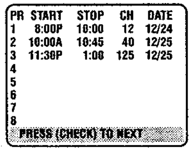
Check, Cancel And Revise Programs

1 DISENGAGE TIMER

Press **TIMER**, then press **POWER**.

2 ACCESS PROGRAM CHECK SCREEN

Press **PROG. CHECK**.



```
PR  START   STOP   CH   DATE
1    8:00P  10:00   12  12/24
2   10:00A  10:45   40  12/25
3   11:30P   1:00  125  12/25
4
5
6
7
8
 PRESS (CHECK) TO NEXT
```

3 ACCESS PROGRAM SCREEN

Press **PROG. CHECK** again to check more information. Each time you press **PROG. CHECK**, the next program's information appears.

To Cancel Or Revise A Program...

4 CANCEL OR REVISE A PROGRAM

To cancel a program, press **CANCEL** at the appropriate program screen.
To revise a program, press the appropriate button: **START+/–, STOP+/–, DATE+/–, CH+/–, SP/EP.**

5 RETURN TO NORMAL SCREEN

Press **PROG. CHECK** as many times as necessary. If there are still programs remaining, go to step **6**.

6 RE-ENGAGE TIMER

Press **TIMER**.

Auto SP→EP Timer

If, when recording in SP mode, there is not enough tape to record the entire program, the VCR automatically switches to EP mode to allow complete recording. This feature is especially handy when recording a program of more than 2 hours in length.

For Example . . .

Recording a program of 140 minutes in length onto a 120-minute tape

Approximately 110 minutes	Approximately 30 minutes
SP mode	EP mode

Total 140 minutes

Make sure you set "AUTO SP→EP TIMER" to "ON" at the Function screen before the timer recording starts.

1 ACCESS MAIN MENU SCREEN

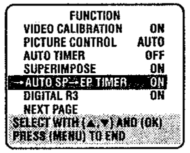
Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 SELECT AUTO SP→EP TIMER SET MODE

Move the highlight bar (arrow) to "AUTO SP→EP TIMER" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "ON".



```
          FUNCTION
  VIDEO CALIBRATION      ON
  PICTURE CONTROL      AUTO
  AUTO TIMER            OFF
  SUPERIMPOSE            ON
→AUTO SP→EP TIMER        ON
  DIGITAL R3             ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *If you have programmed the VCR to timer-record 2 or more programs, the second program and those thereafter may not fit on the tape if you set the Auto SP→EP Timer mode to "ON". In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.*
- *In order to ensure that the recording fits on the tape, this feature may leave a slight non-recorded section at the end of the tape.*
- *There may be some noise at the point on the tape where the VCR switches from SP to EP mode.*
- *The Auto SP→EP Timer feature is not available during ITR (Instant Timer Recording), and the feature will work with the following tapes: T(ST)-30, T(ST)-60, T(ST)-90, and T(ST)-120.*

Auto Timer

When the Auto Timer is set to "ON" the timer is automatically engaged when the VCR's power is turned off. It is automatically disengaged when the VCR is powered back on.

1 ACCESS MAIN MENU SCREEN

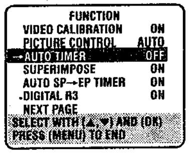
Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷.

3 SELECT AUTO TIMER SET MODE

Move the highlight bar (arrow) to "AUTO TIMER" by pressing **CH▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "ON" or "OFF".



```
          FUNCTION
  VIDEO CALIBRATION      ON
  PICTURE CONTROL      AUTO
→AUTO TIMER             OFF
  SUPERIMPOSE            ON
  AUTO SP→EP TIMER       ON
  DIGITAL R3             ON
  NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

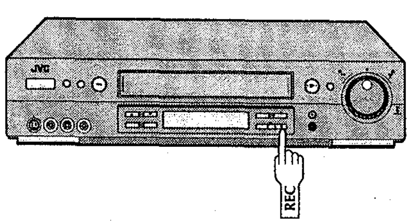
4 RETURN TO NORMAL SCREEN

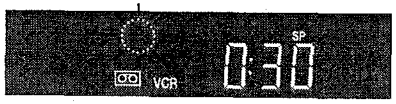
Press **MENU**.

NOTE:

For safety, when "AUTO TIMER" is set to "OFF", all other VCR functions are disabled while the Timer mode is engaged. To disengage the timer, press **TIMER**.

Instant Timer Recording (ITR)





This easy method lets you record from 30 minutes to 6 hours (selectable in 30-min. increments) and shuts the VCR off after recording is finished.

1 START RECORDING

Press **REC** on the front panel.

2 ENGAGE ITR MODE

Press **REC** again. "○" blinks and 0:30 appears on the front display panel.

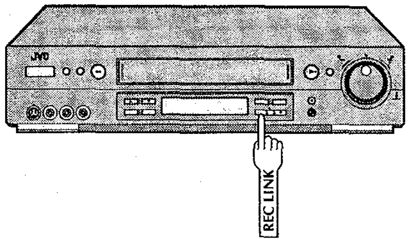
3 SET RECORDING DURATION

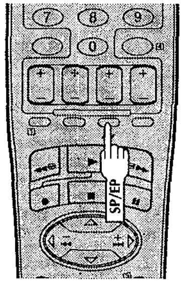
If you want to record for more than 30 minutes, press **REC** to extend the time. Each press extends recording time by 30 minutes.

NOTES:

- *You can only perform ITR using the* **REC** *button on the VCR's front panel.*
- *After you set the ITR time, the previous display reappears.*
- *To check the remaining time, press* **REC** *once during recording and the remaining time will be displayed for about 5 seconds. Be careful not to press* **REC** *again within these 5 seconds, or you will round the recording time up to the next 30 minute increment.*

Automatic Satellite Program Recording





This facility allows you to automatically record a satellite program which is timer-programmed on your external satellite receiver. Connect a satellite receiver to the VCR's rear AUDIO/VIDEO IN or S VIDEO IN* (L-1) connectors and program the timer on the satellite receiver; the VCR starts recording when the signals input from the satellite receiver to the rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors, and when there is no input signals the VCR stops recording and the power shuts off.

* If you have connected the satellite receiver to the VCR's S VIDEO IN connector, set "REAR AUX INPUT" to "S-VIDEO" at the Function screen (☞ pg. 54).

Before performing the following steps:
- Program the timer on the satellite receiver.
- Insert a cassette with the safety tab in place.

1 SET TAPE SPEED

Press **SP/EP** to set the tape speed.

2 ENGAGE AUTO SATELLITE PROG REC MODE

Press and hold **REC LINK** for about 2 seconds. The button lights up and the VCR turns off automatically.

- To disengage the Auto Satellite Prog Rec mode, press **REC LINK**. The button's light goes off.
- If the VCR's power is off, it is not possible to engage the Auto Satellite Prog Rec mode.

ATTENTION

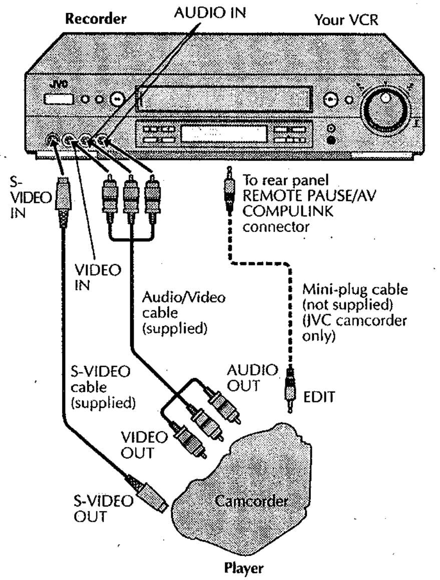
- Be sure not to turn on the satellite receiver before the program is executed; otherwise, the VCR will start recording when the satellite receiver's power is turned on.
- If you have connected another appliance other than a satellite receiver to the rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors, be sure not to engage the Auto Satellite Prog Rec mode; otherwise, the VCR will start recording when the connected appliance's power is turned on.
- Auto Satellite Prog recording and timer-recording cannot be done at the same time.

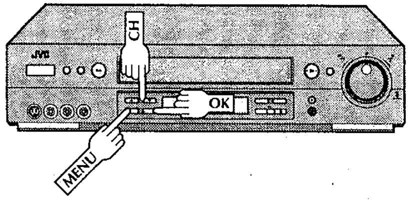
NOTES:

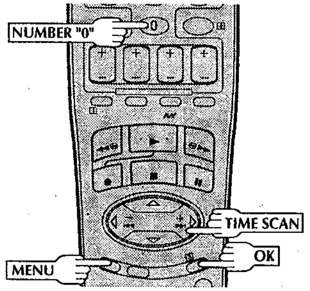
- *Auto Satellite Prog recording is only possible with the rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors.*
- *When the Auto Satellite Prog Rec mode is engaged or the VCR's power is turned off after Auto Satellite Prog recording is finished, the VCR will not enter the Timer mode even though "AUTO TIMER" is set to "ON".*
- *For timer programming of the satellite receiver, refer to the instruction manual of the satellite receiver.*
- *Auto Satellite Prog recording is not possible if your satellite receiver does not have a timer.*
- *The* **REC LINK** *button's light blinks while Auto Satellite Prog recording is in progress.*
- *Pressing the VCR's* **POWER** *button while Auto Satellite Prog recording is in progress turns off the VCR's power and disengages the Auto Satellite Prog Rec mode.*
- *If there is more than one satellite program you wish to record with Auto Satellite Prog Recording, it is not possible to set a different tape speed for each; the tape speed selected in step* **1** *will apply to all the programs for Auto Satellite Prog recording.*
- *The Active Video Calibration (☞ pg. 35) does not work while Auto Satellite Prog recording is in progress.*
- *Auto Clock (☞ pg. 11) does not work when the Auto Satellite Prog Rec mode is engaged.*
- *Depending on the type of satellite receiver, the VCR may not record a short portion at the beginning of the program or may record slightly longer than the actual length of the program.*
- *If you engage the Auto Satellite Prog Rec mode when the satellite receiver's power is on, the VCR will not start Auto Satellite Prog recording even though the* **REC LINK** *button's light blinks. When the satellite receiver shuts off once and is turned back on again, the VCR starts recording.*
- *You can also record a program from your cable system in the same way if the system has a timer and is connected to the VCR's rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors.*
- *When you press the VCR's* **REC LINK** *button to engage the Auto Satellite Prog Rec mode, if the* **REC LINK** *button does not light but instead blinks quickly even though your satellite receiver's power is off, Auto Satellite Prog Recording will not work properly with that satellite receiver*.*
  If this is the case, perform "Express Timer Programming" (☞ pg. 48) to timer-record a satellite program.

* *Some satellite receivers output signals even if the power is off. Auto Satellite Prog Recording is not possible with those satellite receivers.*

Edit From A Camcorder


Recorder
AUDIO IN
Your VCR
S-VIDEO IN
VIDEO IN
To rear panel REMOTE PAUSE/AV COMPULINK connector
Audio/Video cable (supplied)
Mini-plug cable (not supplied) (JVC camcorder only)
S-VIDEO cable (supplied)
AUDIO OUT
EDIT
VIDEO OUT
S-VIDEO OUT
Camcorder
Player





You can use a camcorder as the player and your VCR as the recorder.

1 MAKE CONNECTIONS

Connect an AV cable between the camcorder's VIDEO OUT and AUDIO OUT connectors and your VCR's VIDEO IN and AUDIO IN connectors.

- If connecting a camcorder with an S-VIDEO output connector, it is recommended to use the S-VIDEO connection to minimize picture degradation while editing.
- When a Master Edit Control-equipped JVC camcorder is used, the camcorder is capable of controlling your VCR. The mini-plug cable is a mono 3.5 mm mini-plug to mono 3.5 mm mini-plug connector.
- If connecting to a camcorder with a monaural output, connect the audio output connector on the camcorder to AUDIO IN L of the VCR.

2 LOAD A CASSETTE

Insert the cassette to be recorded on into the recorder.

3 SET RECORDER'S INPUT MODE

Set to "AUX". Press the **NUMBER** key "0" and/or **CH** to select depending on the connector being used – "L-1" for the rear panel input connectors, or "F-1" for the front panel input connectors.

4 ACCESS MAIN MENU SCREEN

Press **MENU**.

5 ACCESS FUNCTION SET SCREEN

Press **CH ▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **TIME SCAN** ▷.

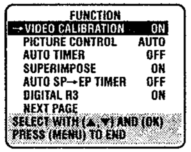
6 SELECT AUX INPUT SET MODE

a– FRONT S-VIDEO IN : Move the highlight bar (arrow) to "FRONT AUX INPUT" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "S-VIDEO".

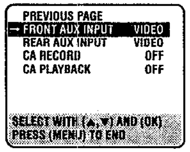
b– FRONT VIDEO IN: Move the highlight bar (arrow) to "FRONT AUX INPUT" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "VIDEO".

c– REAR S-VIDEO IN: Move the highlight bar (arrow) to "REAR AUX INPUT" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "S-VIDEO".

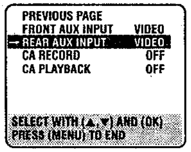
d– REAR VIDEO IN: Move the highlight bar (arrow) to "REAR AUX INPUT" by pressing **CH ▲▼** or **TIME SCAN** △▽, then press **OK** or **TIME SCAN** ▷ to set to "VIDEO".



```
FUNCTION
→VIDEO CALIBRATION      ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 SUPERIMPOSE            ON
 AUTO SP→EP TIMER      OFF
 DIGITAL R3             ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```



```
 PREVIOUS PAGE
→FRONT AUX INPUT     VIDEO
 REAR AUX INPUT      VIDEO
 CA RECORD             OFF
 CA PLAYBACK           OFF

SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```



```
 PREVIOUS PAGE
 FRONT AUX INPUT     VIDEO
→REAR AUX INPUT      VIDEO
 CA RECORD             OFF
 CA PLAYBACK           OFF

SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

7 SELECT "EDIT" FOR PICTURE CONTROL SET MODE

Follow the "Picture Control" section on page 28, then select "EDIT."

If you are using a JVC Master Edit Control-equipped camcorder — go to step **8**.
If you are not using a JVC Master Edit Control-equipped camcorder — go to step **9**.

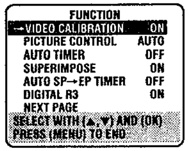
NOTE:

When you select "EDIT" to dub tapes, be sure to select "AUTO" or ("NORM" when "VIDEO CALIBRATION" is set to "OFF") after you finish dubbing the tapes.

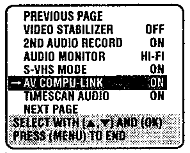
8 ENABLE REMOTE PAUSE FUNCTION

Press **CH ▲▼** or **TIME SCAN** △▽ to move the highlight bar (arrow) to "AV COMPU-LINK", then press **OK** or **TIME SCAN** ▷ to set to "OFF".

- The REMOTE PAUSE/AV COMPU-LINK connector works as the AV Compulink Playback connector when "AV COMPU-LINK" is set to "ON" (☞ pg. 33), and works as the Remote Pause connector when "AV COMPU-LINK" is set to "OFF".



```
FUNCTION
→VIDEO CALIBRATION      ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 SUPERIMPOSE            ON
 AUTO SP→EP TIMER      OFF
 DIGITAL R3             ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```



```
 PREVIOUS PAGE
 VIDEO STABILIZER      OFF
 2ND AUDIO RECORD       ON
 AUDIO MONITOR       HI-FI
 S-VHS MODE             ON
→AV COMPU-LINK          ON
 TIMESCAN AUDIO         ON
 NEXT PAGE
SELECT WITH (▲,▼) AND (OK)
PRESS (MENU) TO END
```

9 RETURN TO NORMAL SCREEN

Press **MENU**.

10 START PLAYER

Set the camcorder to its play mode.

NOTE:

If the camcorder is equipped with a superimpose/OSD disable feature then set its superimpose or display feature to OFF before pressing play.

11 START RECORDER

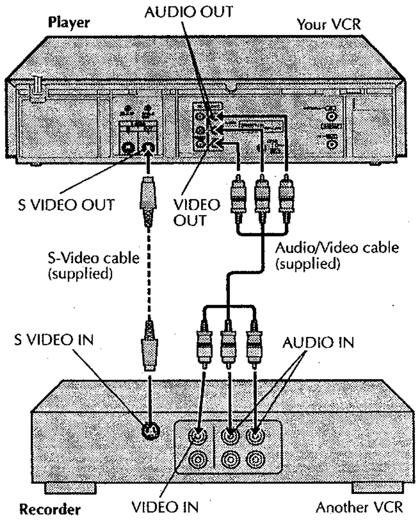
Set your VCR to its record mode.

- If you are using a Master Edit Control-equipped JVC camcorder, it can put the recorder automatically into Record mode. (Refer to camcorder's instruction manual.)

NOTE:

If you use an auxiliary input to connect a cable box or DBS receiver, make sure that the correct AUX INPUT ("VIDEO" or "S-VIDEO") is selected after you have finished editing (☞ steps 4 – 6, pg. 54).

Edit To Or From Another VCR



Advantages Of S-VHS Editing

S-VHS allows you make high resolution video recordings when dubbing from one VCR to another.

You can edit from VHS to S-VHS, from S-VHS to VHS, or from S-VHS to S-VHS.

- From VHS to S-VHS: Record VHS playback signals in the S-VHS mode. Although the picture quality is inherently limited by the orignal VHS source material, the edited tape has better picture quality than those made by VHS-to-VHS editing.
- From S-VHS to VHS: Because the picture quality of the source material is very high, the edited tape has better picture quality than those made by VHS-to-VHS editing.
- From S-VHS to S-VHS: A high resolution copy is made of a high resolution original S-VHS tape with minimal picture degradation. This is the preferred method of video dubbing.

You can use your VCR as the player or the recorder.

1 MAKE CONNECTIONS

Connect an AV cable between the player's VIDEO OUT and AUDIO OUT connectors and the recorder's VIDEO IN and AUDIO IN connectors.

- If using another VCR with an S-VIDEO input or output connector, it is recommended to use the S-VIDEO connection to minimize picture degradation while editing.
- When using your VCR as the recorder and a monaural VCR as the player, connect the player's AUDIO OUT connector to the AUDIO IN L connector on the recorder.

2 LOAD CASSETTES

Insert the playback cassette into the player and the cassette to be recorded on into the recorder.

3 SET RECORDER'S INPUT MODE

Set to "AUX". With this VCR, press the **NUMBER** key "0" and/or **CH** to select depending on the connector being used – "L-1" for the rear AUDIO/VIDEO IN connector, or "F-1" for the front AUDIO/VIDEO IN connector.

NOTE:

*If you use your VCR as the recorder and have connected another VCR to your VCR's S-VIDEO IN connector, you need to set "REAR AUX INPUT" to "S-VIDEO" at the Function screen. Follow steps **4 – 6** from the "Edit From A Camcorder" section (☞ pg. 54).*

4 SELECT "EDIT" FOR PICTURE CONTROL SET MODE

Follow the "Picture Control" section on page 28, then select "EDIT."

NOTE:

When you select "EDIT" to dub tapes, be sure to select "AUTO" or ("NORM" when "VIDEO CALIBRATION" is set to "OFF") after you finish dubbing the tapes.

5 START PLAYER

Set to its play mode.

NOTE:

*If the player is equipped with a superimpose/OSD disable feature then set "SUPERIMPOSE" to "OFF" before pressing **PLAY** (☞ pg. 23).*

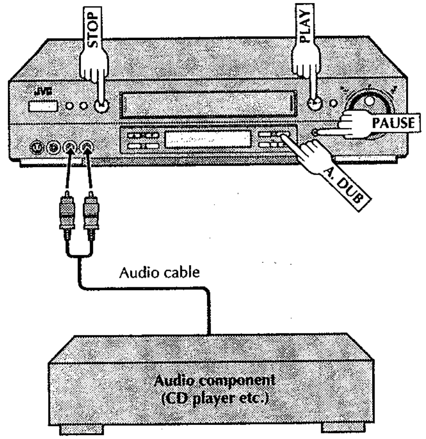
6 START RECORDER

Set to its record mode.

NOTE:

*If you use an auxiliary input to connect a cable box or DBS receiver, make sure that the correct AUX INPUT ("VIDEO" or "S-VIDEO") is selected after you have finished editing (☞ steps **4 – 6**, page 54).*

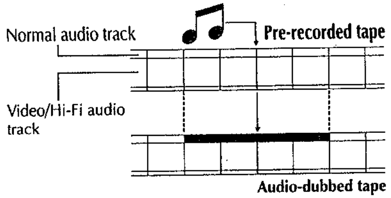
Audio Dubbing



NOTES:

- *When monitoring the sound during Audio Dubbing, the normal soundtrack is automatically selected. If you wish to hear the Hi-Fi or mixed sound (Hi-Fi + Normal soundtracks), refer to the "Select The Soundtrack" section (☞ pg. 29) and select the soundtrack you wish to hear.*
- *Audio dubbing stops automatically when the counter reaches "0:00:00", and the VCR enters the Play mode. Check the counter reading before dubbing.*
- *Audio dubbing is also possible using the rear AUDIO IN connectors.*
- *Audio dubbing cannot be performed on a cassette that has had its record safety tab removed.*
- *When playing back an audio-dubbed tape, refer to the "Select The Soundtrack" section (☞ pg. 29) to select the soundtrack you wish to hear.*
- *Picture may be distorted during Audio Dubbing Pause.*
- *It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.*

Audio dubbing replaces the normal audio sound of a previously recorded tape with a new soundtrack. Use your VCR as the recorder.



1 MAKE CONNECTIONS

Connect an audio component to the AUDIO IN L + R connectors on the VCR's front panel. *When connecting monaural equipment, use only the VCR's AUDIO IN L connector.

2 SET INPUT MODE

Press the remote control's **NUMBER** key "0" and **CH** so that "F-1" appears in place of a channel number.

3 LOCATE START POINT

Press **PLAY** to start playback of the tape in your VCR, and press **PAUSE** when you find the point where you want to start dubbing.

4 ENGAGE AUDIO DUBBING

Press **A. DUB.**

- Your VCR enters the Audio Dubbing Pause mode. (○ blinks, ▷ and ▥ light up on the front display panel.)

5 START DUBBING

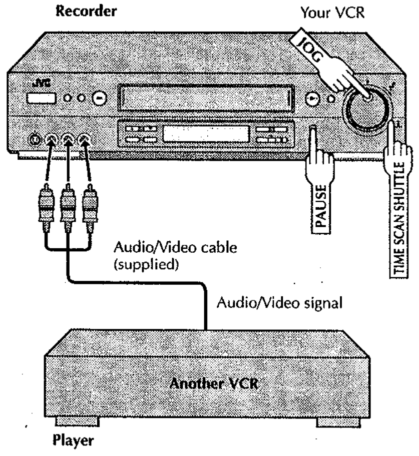
Engage the audio component's Play mode, then press **PLAY** to start the tape in your VCR. Audio dubbing begins at this point.

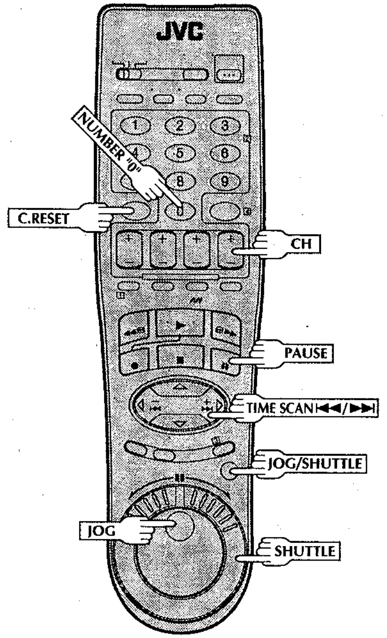
- ○ blinks and ▷ is displayed on the front display panel.
- To stop dubbing temporarily, press **PAUSE**. Press **PLAY** to resume dubbing.

6 END AUDIO DUBBING

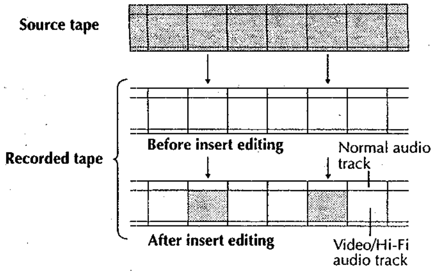
Press **STOP** to stop the tape in your VCR, and engage the audio component's Stop mode.

Insert Editing





Insert editing replaces part of the recorded scene with new material. Both the picture and Hi-Fi audio soundtrack are replaced with new ones, while the normal audio soundtrack remains unchanged. If you wish to change the normal audio track as well, use the audio dubbing function simultaneously. Use your VCR as the recorder.



1 MAKE CONNECTIONS

Connect the player's VIDEO OUT or S-VIDEO OUT and AUDIO OUT connectors to your VCR's VIDEO IN or S-VIDEO IN and AUDIO IN on the front panel.

2 SET INPUT MODE

Press the **NUMBER** key "0" and **CH** so that "F-1" appears in place of a channel number.

- Be sure to select the correct FRONT AUX INPUT ("VIDEO" or "S-VIDEO"). (To select the correct AUX INPUT, follow steps **4 – 6** from the "Edit From A Camcorder" section ☞ pg. 54).

3 LOCATE END POINT

Load the recording cassette into your VCR, and play it back to determine the edit-out point (the end of the segment to be replaced) using the **JOG/TIME SCAN SHUTTLE** controls or pressing **TIME SCAN ◀◀ ▶▶** and **PAUSE**.

- To use the **JOG** dial/**SHUTTLE** ring, first press the **JOG/SHUTTLE** button on the remote control so that the button lights up.

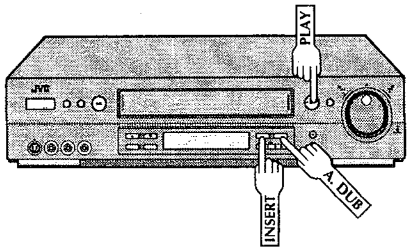
4 RESET THE COUNTER

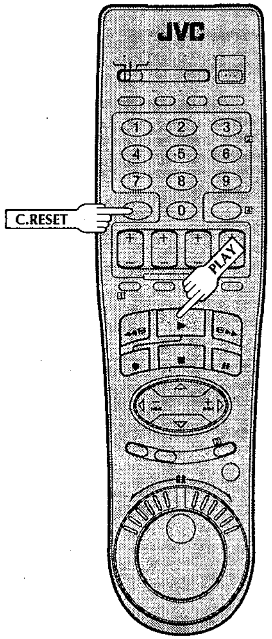
Press **C.RESET** to change the counter display to "0:00:00".

5 LOCATE START POINT

Determine the edit-in point (the beginning of the segment to be replaced) using the **JOG/TIME SCAN SHUTTLE** controls or pressing **TIME SCAN ◀◀ ▶▶** and **PAUSE**.

- Be sure to engage the Still mode at the edit-in point.





6 ENGAGE INSERT EDITING

Press **INSERT**.

- Your VCR enters the Insert-Pause mode. (○, ▷ and ▤ light up on the front display panel.)
- The TV screen changes from the still picture to the input source you are going to record.

7 START EDITING

Load the source cassette and play back the segment that is to be inserted. When you reach the start of the section of the source tape that you wish to insert, press **PLAY** to start the tape in your VCR; Insert Editing begins at this point.

- ▷ and ○ are displayed on the front display panel.

8 END INSERT EDITING

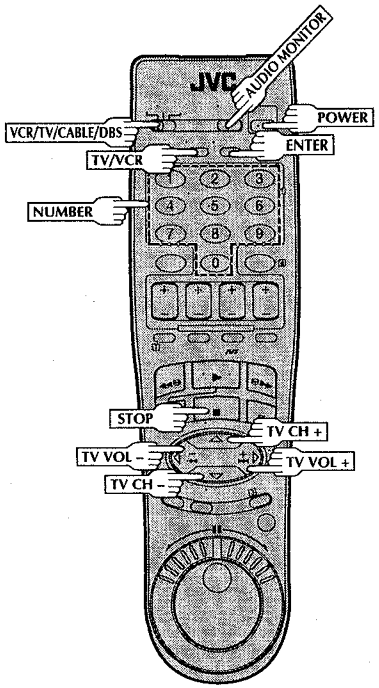
At counter "0:00:00", Insert Editing will stop automatically while the tape continues running in the Play mode. If you wish to stop Insert Editing before the specified edit-out point, press **C.RESET**.

FOR AV INSERT EDITING

If you want to replace the picture, Hi-Fi audio soundtrack and normal audio soundtrack all at the same time...
In step **6** above, after you press **INSERT**, press **A. DUB.** also.
(○ and ▷ blink and ▤ lights up on the display panel.)

NOTES:

- *Insert editing is not possible with cassettes whose safety tab has been removed.*
- *In insert editing, the recording speed (SP/EP) is determined by the previous recording to be replaced. If the previous recording's speed changes within a single edit, the inserted picture will be distorted at the switching point.*
- *A small portion of the recording which precedes an insert edit may become erased.*
- *Insert Editing is also possible using the rear connectors. When using these connectors, be sure to select the correct REAR AUX INPUT. To select the correct REAR AUX INPUT ("VIDEO" or "S-VIDEO"), follow steps **4 – 6** from the "Edit From A Camcorder" section, ☞ pg 54.*



TV BRAND NAME	BRAND CODE
JVC	01
MAGNAVOX	02
MITSUBISHI	03
PANASONIC	04, 11
RCA	05
SHARP	06
SONY	07
TOSHIBA	08
ZENITH	09
HITACHI	10
SAMSUNG	12
SANYO	13
SEARS	13

TV Multi-Brand Remote Control

The VCR's remote control can control several functions on JVC remote control TVs and on the brands of remote control TVs listed below.

1 TURN ON THE TV

Turn the power on using the TV's remote control.

2 SET REMOTE CONTROL MODE

Set the **VCR/TV/CABLE/DBS** switch on the VCR's remote control to TV.

3 SET TV BRAND CODE

Refer to the chart below. While holding down **POWER** on the VCR's remote control, enter your TV's brand code using the **NUMBER** keys, then press **STOP**. Follow the example shown at bottom left.

- Once you have set the remote control to operate the TV, you don't have to repeat this step until you replace your remote control's batteries.
- PANASONIC has two codes. If the TV does not function with one code, try entering the other.

4 OPERATE TV

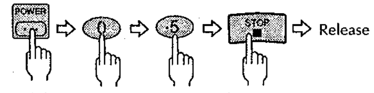
First, press **POWER** on the remote to see if the TV's power goes off as it should. If it does, try other operations.

- The **POWER**, **TV/VCR**, **TV CH +/–**, **TV VOL +/–**, **AUDIO MONITOR** (TV Muting) and **NUMBER** keys on the remote can all be used to operate the TV. *For some brands of TV, you must press **ENTER** after having pressed the **NUMBER** keys.
- To return the remote to VCR control, set the **VCR/TV/CABLE/DBS** switch to VCR.

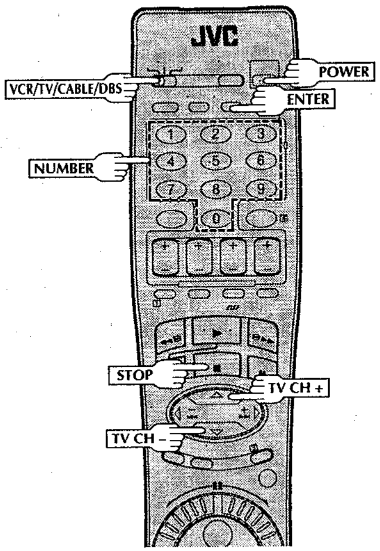
NOTE:

Depending on the type of TV, there may be cases where some or all functions cannot be operated using the remote control.

(Ex.) To set remote control to RCA 05:



Hold down Press in succession



CABLE BOX BRAND NAME	BRAND CODE
ARCHER	01, 05, 17
CABLETENNA	01, 17
CABLEVIEW	15, 16, 17, 21, 25
CITIZEN	15, 16, 17, 21, 25
CURTIS	02, 08
DIAMOND	01, 17
EASTERN	19
GC BRAND	15, 16, 17, 21, 25
GEMINI	15
GENERAL INSTRUMENTS	01, 04, 06, 11, 12, 15
HAMLIN	10, 18, 19, 23
JASCO	15
JERROLD	01, 04, 06, 11, 12, 15
NOVAVISION	02, 08
OAK	07, 20
PANASONIC	13, 14
PULSER	15, 16, 17, 21, 25
RCA	13, 14
REGAL	10, 18, 19, 23
REGENCY	19
REMBRANDT	01, 16, 17
SAMSUNG	05, 16, 24
SCIENTIFIC ATLANTA	02, 08
SIGMA	07, 20
SL MARX	05, 16, 17, 24, 25
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STARGATE	05, 15, 16, 17, 21, 24, 25
TELEVIEW	05, 16, 24
TOCOM	01, 04, 16
UNIKA	01, 17
UNIVERSAL	16, 17, 25
VIDEOWAY	03, 09, 22
ZENITH	03, 09, 22

Cable Box Multi-Brand Remote Control

The VCR's remote control can control functions on the brands of cable boxes listed below. Some cable box brands have more than one code. If your cable box does not function with a specified code, try other codes.

1 TURN ON THE CABLE BOX

Turn the power on using the cable box's remote control.

2 SET REMOTE CONTROL MODE

Set the **VCR/TV/CABLE/DBS** switch on the VCR's remote control to CABLE/DBS.

3 ENTER CABLE BOX BRAND

While holding down **POWER** on the VCR's remote control, use the **NUMBER** keys to enter the cable box brand number from the chart at bottom left and then press **STOP**. Follow the example shown below.

- Once you have set the remote control to operate the cable box, you don't have to repeat this step until you replace the remote control's batteries.

4 OPERATE CABLE BOX

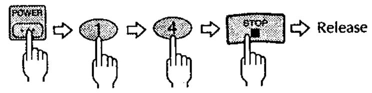
First, press **POWER** to see if the cable box's power goes off as it should. If it does, try other functions (**TV CH +/–** and the **NUMBER** keys can be used to operate the cable box).

- For some brands of cable box, you must press **ENTER** after having pressed the **NUMBER** keys.
- To return the remote to VCR control, set the **VCR/TV/CABLE/DBS** switch to VCR.

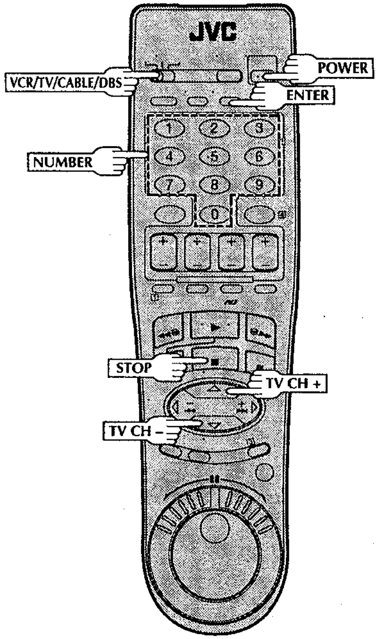
NOTES:

- *You must set the cable box brand for your remote control and the cable box brand for your Controller (☞ pg. 16) separately. The list of cable box brands that can be controlled by your remote control is different from the list of brands that can be controlled by your controller.*
- *Depending on the type of cable box, there may be cases where some or all functions cannot be operated using the remote control.*
- *It's not possible to set the remote control for both your cable box and a DBS receiver at the same time. You can only set the remote control to operate one of these units at a time.*

(Ex.) To set remote control to RCA 14:

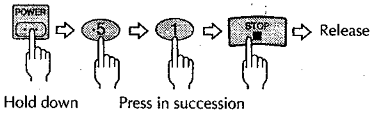


Hold down Press in succession



DBS BRAND NAME	BRAND CODE
JVC (DISH Network)	51
ECHOSTAR (DISH Network)	51
PRIMESTAR	50
SONY (DSS)	41
RCA (DSS)	40

(Ex.) To set remote control to JVC 51:



DBS Receiver Multi-Brand Remote Control

The VCR's remote control can control functions on the brands of DBS (Direct Broadcast Satellite) receivers listed below.

1 TURN ON THE DBS RECEIVER

Turn the power on using the DBS receiver's remote control.

2 SET REMOTE CONTROL MODE

Set the **VCR/TV/CABLE/DBS** switch on the VCR's remote control to CABLE/DBS.

3 ENTER DBS RECEIVER BRAND

While holding down **POWER** on the VCR's remote control, use the **NUMBER** keys to enter the DBS receiver brand number from the chart below and then press **STOP**. Follow the example shown at bottom left.

- Once you have set the remote control to operate the DBS receiver, you don't have to repeat this step until you replace the remote control's batteries.

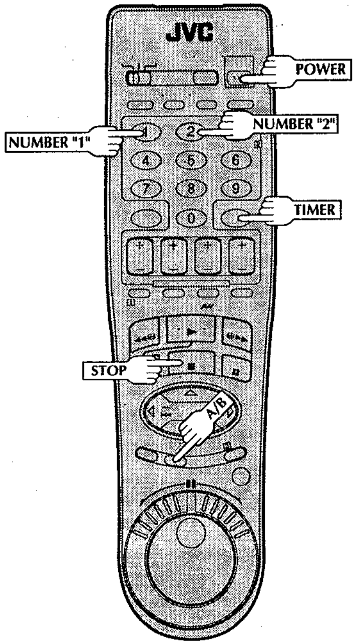
4 OPERATE DBS RECEIVER

First, press **POWER** to see if the DBS receiver's power goes off as it should. If it does, try other functions (**TV CH +/–** and the **NUMBER** keys can be used to operate the DBS receiver).

- For some brands of DBS receiver, you must press **ENTER** after having pressed the **NUMBER** keys.
- To return the remote to VCR control, set the **VCR/TV/CABLE/DBS** switch to VCR.

NOTES:

- *You must set the DBS receiver brand for your remote control and the DBS receiver brand for your Controller (☞ pg. 19) separately.*
- *Depending on the type of DBS receiver, there may be cases where some or all functions cannot be operated using the remote control.*
- *It's not possible to operate a DBS receiver that is not equipped with a remote control sensor.*
- *Though ECHOSTAR has a number of different remote codes, this remote control is applicable only to one of those codes preset at the factory.*
- *It's not possible to set the remote control for both your DBS receiver and a cable box at the same time. You can only set the remote control to operate one of these units at a time.*



Child Lock

This feature allows you to prevent the operation of the VCR.

1 TURN VCR POWER ON

Press **POWER**.

2 ENGAGE CHILD LOCK

Press and hold **POWER** on the remote control until the Child Lock indicator ("—") appears on the front display panel.

- Power turns OFF and the VCR cannot be turned on from the **POWER** button on the front panel.
- To cancel Child Lock, press and hold **POWER** on the remote until the VCR turns on. During timer recording, pressing **TIMER** also cancels Child Lock.

NOTES:

- *When Child Lock is engaged, make sure to keep the remote control out of the reach of children.*
- *Timer recording of programs that were previously set can be performed while the Child Lock is engaged. The feature remains in effect after the recording is finished.*

Control Two JVC VCRs

The remote control is capable of controlling two JVC VCRs independently; one set to respond to your remote control's **A** code control signals and another set to respond to **B** code control signals. The remote control is preset to send **A** code signals because your VCR is initially set to respond to **A** code signals. You can easily modify your VCR to respond to **B** code signals.

1 UNPLUG VCR'S POWER CORD

Unplug from the AC outlet.

2 SET REMOTE CONTROL CODE

While holding down **A/B** on the remote control, press the **NUMBER** key "2" and then press **STOP**.

3 PLUG IN POWER CORD

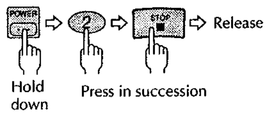
Plug back in to the AC outlet.

4 TURN VCR POWER ON

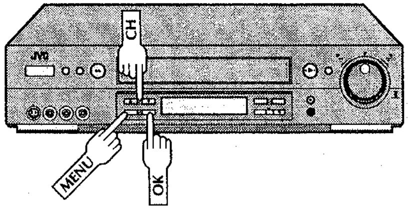
Press **POWER** on the remote.

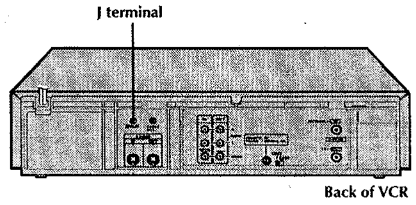
The VCR will now respond only to **B**-code commands.
To set the VCR back to respond to A code signals, repeat the same procedure as shown above except pressing **NUMBER** key "1" instead of "2" in step **2**.
You can control two VCRs with the same remote control by switching the remote's code between **A** and **B** (☞ Step **2**), pressing "1" for **A**-code commands and "2" for **B**-code commands.

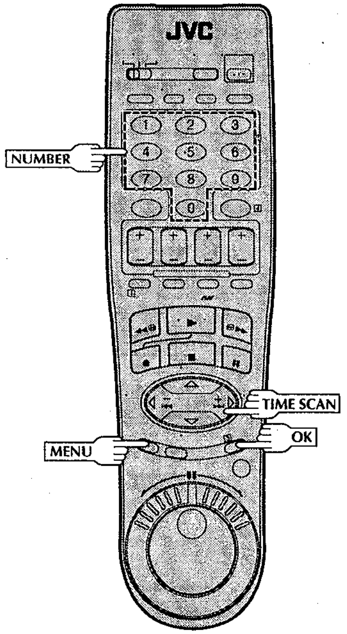
(Ex.) To set remote control **B** code:



INFORMATION ON J TERMINAL







J Terminal (JLIP(Joint Level Interface Protocol) Connector)

The J Terminal is used to connect the VCR to a personal computer or similar device to allow computerized control of the VCR during editing and certain other operations.

For further details consult your nearest JVC dealer.
U.S. customers can contact JVC directly toll free at 1-800-252-5722.

JLIP ID Number

Your VCR has its own JLIP ID number. This ID number must be unique when your VCR is connected to another device via its J terminal. The ID Number is preset to "1" at the factory. You can change this number to any number between "1" and "99".
If it is necessary to change the JLIP ID number perform the following steps.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS INITIAL SET SCREEN

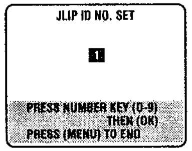
Move the highlight bar (arrow) to "INITIAL SET" by pressing **CH ▲▼** or **TIME SCAN △▽**, then press **OK** or **TIME SCAN ▷**.

3 ACCESS JLIP ID NO. SET SCREEN

Move the highlight bar (arrow) to "JLIP ID NO. SET" by pressing **CH ▲▼** or **TIME SCAN △▽**, then press **OK** or **TIME SCAN ▷**.

4 SET JLIP ID NUMBER

Press **NUMBER** key to enter the desired ID number, then press **OK**.



JLIP ID NO. SET

1

PRESS NUMBER KEY (0-9)
THEN (OK)
PRESS (MENU) TO END

5 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTE:

This VCR may not accept a command from your personal computer such as:
- *Power ON/OFF while the VCR is in the Timer mode.*

TROUBLESHOOTING

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your VCR off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The power won't come on.	● The power cord is disconnected.	Connect the power cord.
2. The clock works, but the VCR's power won't come on.	● The TIMER mode is engaged with "Auto Timer" set to "OFF" (☞ pg. 51). ● The Child Lock mode is engaged.	Press **TIMER** to disengage. Press and hold **POWER** on the remote to disengage the mode (☞ pg. 63).
3. The remote control won't function.	● The batteries are discharged.	Replace the dead batteries with new ones.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The cassette gets stuck partway during loading, and is ejected.	● The cassette was inserted incorrectly.	Make sure the cassette's window is facing up, the rear label side is facing you and the arrow on the front of the cassette is pointing towards the VCR. Then insert the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape is running but the picture won't appear.	● If you're using the RF OUT connection (☞ pg. 6), the channel selector on the TV is set incorrectly. ● If you're using the AV connection (☞ pg. 6), the TV receiver is set to the wrong mode.	Set the channel selector to channel 3 or 4. Set the TV receiver to its AV mode.
2. Noise appears during visual search.	● This is normal.	
3. Breaks are noticeable in Hi-Fi soundtrack.	● Automatic tracking is engaged.	Disengage Auto Tracking and adjust the tracking manually (☞ pg. 26).
4. The playback picture is blurred or interrupted, even though TV broadcasts are clear.	● The video heads may be dirty.	The heads must be cleaned. Consult your JVC dealer.
5. The Hi-Fi soundtrack cannot be heard.	● The AUDIO MONITOR option was set incorrectly.	Set "AUDIO MONITOR" to "HI-FI" (☞ pg. 29).

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording won't start.	● There's no cassette loaded. ● The loaded cassette has had its record safety tab removed.	Insert a cassette. Remove the cassette and cover the hole with adhesive tape, or load a cassette on which the record safety tab is intact.
2. TV broadcasts won't record properly.	● The VCR has been set to its AUX mode by mistake.	Set the VCR to the appropriate channel.
3. Tape-to-tape editing won't work.	● The VCRs or the camcorder and the VCR have been incorrectly connected. ● The power to one or more of the units has not been turned on. ● The recorder's input mode has been set incorrectly.	Refer to the directions and the illustration under "Edit To Or From Another VCR" (☞ pg. 56) or "Edit From A Camcorder" (☞ pg. 54) and properly connect the units. Make sure the power to all units is on. Select the recorder's appropriate input mode.

CONTINUED ON NEXT PAGE

TIMER RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	• The clock and/or the timer have been set incorrectly. • The timer is not engaged. • The VCR has not been set up properly.	Set the clock and/or timer correctly. Press **TIMER** and check to make sure that ⊕ appears on the front display panel. Re-perform the set-up procedures. Make sure you have compensated for Guide Channel and VCR or cable box channel number mismatches (☞ pg. 46).
2. Timer programming won't work.	• Timer recording is in progress.	Timer programming can't be performed when timer recording is in progress. Wait until it finishes.
3. ⊕ and 📼 on the front display panel won't stop blinking.	• The timer is engaged but there's no cassette loaded.	Load a cassette with the record safety tab intact, or with the hole covered with adhesive tape.
4. The cassette is automatically ejected, and ⊕ and 📼 on the front display panel won't stop blinking.	• The loaded cassette has had its record safety tab removed.	Remove the cassette and cover its hole with adhesive tape, or replace it with a cassette on which the safety tab is intact.
5. ⊕ blinks for 10 seconds and the timer mode is disengaged.	• **TIMER** has been pressed when there are no programs in memory, or the timer record program information has not been programmed correctly.	Check the programmed data and re-program as necessary, then press **TIMER** again.
6. The cassette is automatically ejected, the power shuts off and ⊕ and 📼 won't stop blinking.	• The end of tape was reached during timer recording.	The program may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire program.
7. Cable channels are not automatically switched during timer recording.	• The Controller is not properly connected to the VCR. • The output channel selected in the Cable Box Set screen is incorrect. • The cable box's power is off.	Connect the Controller correctly (☞ pg. 15). After confirming your cable box's output channel number, re-access the Cable Box Set screen and select the correct number (☞ pg. 16). Make sure the power is on before timer recording starts.
8. Satellite channels are not automatically switched during timer recording.	• The Controller is not properly connected to the VCR. • The output channel selected in the DBS Receiver Set screen is incorrect. • The VCR is not set correctly to control the DBS Receiver. • The DBS receiver's power is off.	Connect the Controller correctly (☞ pg. 18). After confirming your DBS receiver's output channel number, re-access the DBS Receiver Set screen and select the correct number (☞ pg. 19). Set the correct DBS Receiver brand code (☞ pg. 20). Make sure the power is on before timer recording starts.
9. Timer recording begins as scheduled, but the channel is always incorrect.	• Even though you don't use an external Cable Box, "CABLE BOX SET" is set to "ON".	Set "CABLE BOX SET" to "OFF" (☞ pg. 16).
10. We moved, and now VCR Plus+ doesn't work properly.	• The receivable stations in the new area are received on different channels than those in the previous area.	Re-perform the VCR Plus+ setup procedure (☞ pg. 46).
11. "PROGRAM FULL" is displayed on the screen.	• All 8 programs of the VCR's timer memory are used.	Wait until a space in memory clears, or cancel unnecessary program information (☞ pg. 50).

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. When scanning channels, some of them are skipped over.	• Those channels have been preset to be skipped.	If you need the skipped channels, restore them (☞ pg. 14).
2. The channel can't be changed.	• Recording is in progress.	Press **PAUSE** to pause the recording, change channels, then press **PLAY** to resume recording.
3. The remote control won't operate my TV or cable box or DBS receiver.	• The remote control brand setting is incorrect.	Re-set the remote control to the correct brand (☞ pg. 60 or 61 or 62).
4. Even though Auto or Semi-Auto clock setting has been selected, the clock is incorrect.	• The clock setting data received from the Host Channel is incorrect.	Select a different Host Channel during the Semi-Auto setting procedure (☞ pg. 11), or perform the Manual setting procedure (☞ pg. 12).

ATTENTION
This VCR contains microcomputers. External electronic noise or interference can cause microcomputer to malfunction. If the VCR does not operate correctly switch its power off and unplug the power cord from the AC supply. Wait for a while and then plug the power back in. Eject and check the condition of the cassette. If everything appears normal resume operating the VCR as usual.

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.

……

Q. Can the VCR indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.

……

Q. During search, still and frame-by-frame playback, the picture is intermittent. What's the cause?
A. Picture loss occurs when these types of playback are attempted with a tape recorded in LP mode. Pressing **PLAY** to return to normal playback will restore the picture.

……

Q. When returning from multi-speed search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.

……

Q. When playing back programs that have been timer-recorded with consecutive times (such one program from 8:00 to 9:00 and another one from 9:00 to 10:00), the picture and sound become momentarily distorted at the point where the first program ends and the second program begins. Is this a malfunction?
A. No. This is normal.

……

Q. Other than preventing further recording, what effect does removing the safety tab have?
A. It disables marking of index codes.

……

Q. Sometimes, during Index Search, the VCR can't find the program I want to see. Why not?
A. There may be index codes too close together.

……

Q. During playback, on-screen operational indicators sometimes jitter. Why does this happen?
A. If the condition of the tape being played back is not good, jittering of the video (including on-screen indicators) may occur.

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the new recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.

……

Q. Can the VCR indefinitely remain in the Record-Pause mode?
A. No. The VCR automatically goes to its Stop mode after 5 minutes to protect the heads. When paused during Instant Timer Recording (ITR), the VCR shuts off automatically after 5 minutes.

……

Q. What happens if the tape runs out during recording?
A. The VCR automatically rewinds it to the beginning.

TIMER RECORDING

Q. REC and ◷ remain lit on the front display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.

……

Q. Can I program the timer while I'm watching a tape or a TV broadcast?
A. Yes, but while you are setting the timer you won't see the tape's or broadcast program's picture as it is replaced by the on-screen menu. The audio from the tape or broadcast program will be present during the setting of the timer.

List Of Terms

This guide serves as a quick way to locate frequently used terms and on-screen display names.

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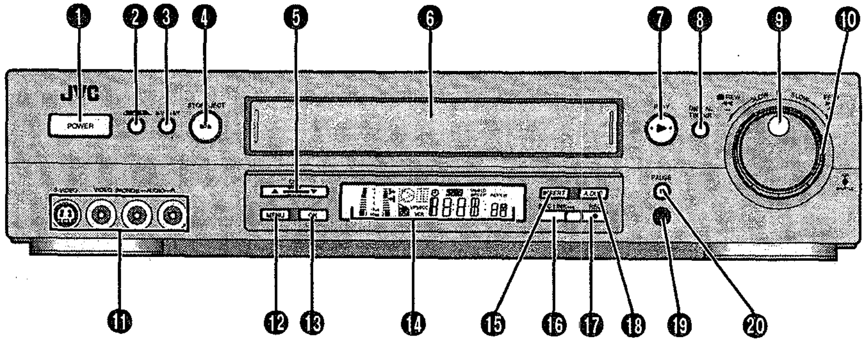
FRONT VIEW


JVC
POWER
PAUSE
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① Power On/Off Button (☞ pg. 9)
② Instant REVIEW Button (☞ pg. 27)
③ S-VHS ET Button (☞ pg. 40)
④ STOP/EJECT Button (☞ pg. 21)
⑤ Channel [CH] ▲▼ Button (☞ pg. 22)
⑥ Cassette Loading Slot
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⑧ DIGITAL TBC/NR Button (☞ pg. 34)
⑨ JOG Dial (☞ pg. 25)
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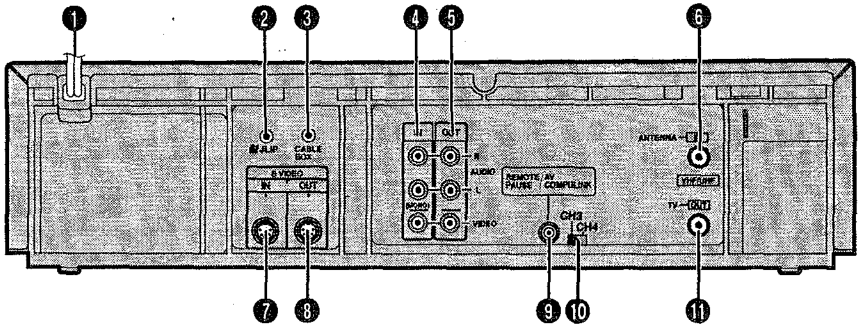
⑳ PAUSE Button (☞ pg. 24)

REAR VIEW


①
②
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⑤
⑥
⑦
⑧
⑨
⑩
⑪
JLIP
CABLE BOX
S VIDEO
IN
OUT
AUDIO
VIDEO
REMOTE/AV PAUSE COMPULINK
CH3
CH4
ANTENNA
TV

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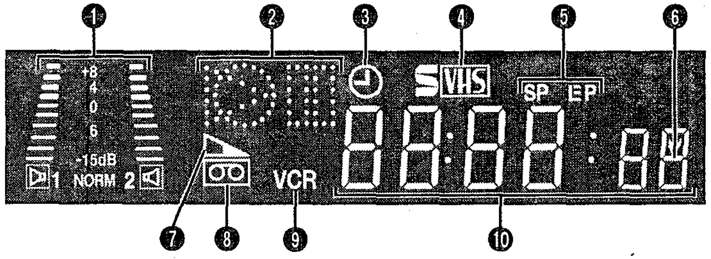
③ CABLE BOX Controller Connector (☞ pg. 15, 18)
④ VIDEO/AUDIO Input Connectors (☞ pg. 56)
⑤ VIDEO/AUDIO Output Connectors (☞ pg. 56)
⑥ ANTENNA IN Connector (☞ pg. 6)
⑦ S VIDEO Input Connector (☞ pg. 56)
⑧ S VIDEO Output Connector (☞ pg. 7)
⑨ REMOTE PAUSE/AV COMPULINK Connector
  - REMOTE PAUSE Connector (☞ pg. 54)
  - AV COMPU-LINK Connector (☞ pg. 33)
⑩ Channel 3/4 Switch (☞ pg. 6)
⑪ TV OUT Connector (☞ pg. 6)

FRONT DISPLAY PANEL

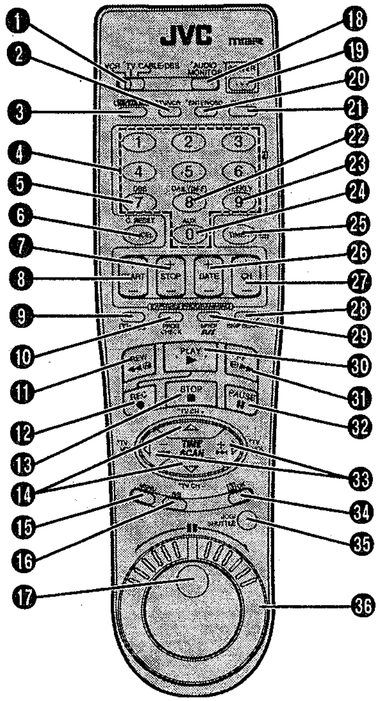

①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
+8
4
0
6
-15dB
1 NORM 2
SVHS
SP EP
VCR
88:88 : 88

① Audio Level Indicator ☞ pg. 43
② Symbolic Mode Indicators

PLAY: FF/REW VARIABLE SHUTTLE SEARCH:	▷	STILL: SLOW:	▷▥
		RECORD:	○
		RECORD PAUSE:	○▥
AUDIO DUBBING:			✺
AUDIO DUBBING PAUSE:			✺▥
INSERT:			⊳
INSERT PAUSE:			⊳▥
AUDIO DUBBING INSERT:			✺
AUDIO DUBBING INSERT PAUSE:			✺▥

③ Timer Mode Indicator (☞ pg. 45, 49)
④ S-VHS Indicator (☞ pg. 40)
⑤ Tape Speed Indicators (☞ pg. 22)
⑥ Child Lock Indicator (☞ pg. 63)
⑦ Tape Remaining Time Indicator (☞ pg. 39)
⑧ "Cassette Loaded" Mark
⑨ VCR Mode Indicator (☞ pg. 39)
⑩ Channel Display ["L-1" and "F-1" for AUX mode]
Counter Display (☞ pg. 8)
Clock Display (☞ pg. 8)

REMOTE CONTROL



Buttons with a small dot on the left side of the name can also be used to operate your TV with the **VCR/TV/CABLE/DBS** switch set to TV. ☞ pg. 60

① VCR/TV/CABLE/DBS Switch (☞ pg. 60, 61, 62)
② TV/VCR Button (☞ pg. 39)
③ Instant REVIEW Button (☞ pg. 27)
④ NUMBER Buttons (☞ pg. 22, 44, 60, 61, 62)
⑤ DBS Button (☞ pg. 49)
⑥ CANCEL Button (☞ pg. 50)
Counter [C.] RESET Button (☞ pg. 27)
⑦ STOP +/– Button (☞ pg. 48)
⑧ START +/– Button (☞ pg. 48)
⑨ PROG. Button (☞ pg. 44, 48)
⑩ PROG. CHECK Button (☞ pg. 50)
⑪ Rewind [REW] Button (☞ pg. 21)
⑫ Record [REC] Button (☞ pg. 22)
⑬ STOP Button (☞ pg. 21)
⑭ TIME SCAN △▽ Button (☞ pg. 9)
TV Channel [CH] +/– Button (☞ pg. 60, 61, 62)
⑮ MENU Button (☞ pg. 9)
⑯ A/B Code Button (☞ pg. 63)
⑰ JOG Dial (☞ pg. 25)
⑱ AUDIO MONITOR Button (☞ pg. 29)
TV Muting Button (☞ pg. 60)
⑲ POWER On/Off Button (☞ pg. 9)
⑳ ENTER Button (☞ pg. 22)
On-Screen Display [OSD] Button (☞ pg. 23)
㉑ DISPLAY Button (☞ pg. 27)
㉒ DAILY Timer Recording Button (☞ pg. 45, 49)
㉓ WEEKLY Timer Recording Button (☞ pg. 45, 49)
㉔ "AUX" Mode Select Button (☞ pg. 54)
㉕ TIMER Button (☞ pg. 45, 49)
㉖ DATE +/– Button (☞ pg. 48)
㉗ Channel [CH] +/– Button (☞ pg. 22, 48)
㉘ SKIP SEARCH Button (☞ pg. 26, 30)
㉙ Recording Speed [SP/EP] Button (☞ pg. 22)
㉚ PLAY Button (☞ pg. 21)
㉛ Fast-Forward [FF] Button (☞ pg. 21)
㉜ PAUSE Button (☞ pg. 24)
㉝ TIME SCAN |◀◀ ▶▶| (◁ ▷) Button
(☞ pg. 24, 27, 37)
TV Volume [VOL] +/– Button (☞ pg. 60)
㉞ OK Button (☞ pg. 9)
㉟ JOG/SHUTTLE Button (☞ pg. 25)
㊱ SHUTTLE Ring (☞ pg. 25)

How To Use

The remote control can operate most of your VCR's functions, as well as basic functions of TV sets, Cable Boxes and DBS Receivers.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

NOTES:

- *When inserting the batteries, be sure to insert in the correct directions as indicated under the battery cover.*
- *If the remote control doesn't work properly, remove its batteries. Replace with fully charged batteries and then try again.*

SPECIFICATIONS

GENERAL

Power requirement	: AC 120 V∿ , 60 Hz
Power consumption	
Power on	: 22 W
Power off	: 3 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: –20°C to 60°C (–4°F to140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 437 x 97 x 347 mm (17-1/4" x 3-7/8" x 13-11/16")
Weight	: 4.8 kg (10.6 lbs)
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/ Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 240 lines (VHS) : 400 lines (S-VHS)
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) : S-Video connectors (IN x 2, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2–13
UHF	: Channels 14–69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/ 8 programs
Memory backup time	: Approx. 10 min.

ACCESSORIES

Provided accessories	: RF cable (F-type), Infrared remote control unit, "AA" battery x 2, Audio/Video Cable, S-Video cable (4-pin), Controller

Specifications shown are for SP mode unless otherwise specified. E. & O.E. Design and specifications subject to change without notice.

HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE: 1-800-252-5722
http://www.jvcservice.com

Dear customer:
In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, call 1-800-252-5722 for your authorized servicer. Remember to retain your Bill of Sale for Warranty Service.

— JVC

JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.

FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road
Fairfield, NJ 07004-2105
(973) 808-9279

1500 Lakes Parkway
Lawrenceville, GA 30243-5857
(770) 339-2522

705 Enterprise Street
Aurora, IL 60504-8135
(630) 851-7855

5665 Corporate Avenue
Cypress, CA 90630-4727
(714) 229-8011

10700 Hammerly Boulevard, Suite 110
Houston, TX 77043-2310
(713) 935-9331

2969 Mapunapuna Place, Suite 101
Honolulu, HI 96819-2000
(808) 833-5828

230 Eliot Street
Ashland, MA 01721-2377
(508) 881-5923

8192 W State Road 84
Davie, FL 33324-4611
(954) 472-1960

890 Dubuque Avenue
South San Francisco, CA 94080-1804
(650) 871-2666

Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

NATIONAL HEADQUARTERS
JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.
107 Little Falls Road
Fairfield, NJ 07004-2105

If you ship the product...

Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.

Don't service it yourself.

CAUTION
To prevent electrical shock, do not open the cabinet. No user serviceable parts inside.
Refer servicing to qualified service personnel.

ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer.
Or from the 48 Continental United States call toll free: 1-800-882-2345.

LIMITED WARRANTY

CONSUMER VIDEO 1-90

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP from the date of original retail purchase for the period as shown below. ("The Warranty Period")

PARTS	LABOR
1 YR	90 DAYS

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY (50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

WHAT WE WILL DO:
If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for Television sets having a screen size 25 inches and above which are covered on an in-home basis.

WHAT YOU MUST DO FOR WARRANTY SERVICE:
Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800) 252-5722.

If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus a letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be given to you by the toll-free number.

If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

WHAT IS NOT COVERED:
This limited warranty provided by JVC does not cover:
1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than a service facility authorized by JVC to render such service, or if affixed to any attachment not provided with the products, or if the model or serial number has been altered, tampered with, defaced or removed;
2. Initial installation and installation and removal for repair;
3. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning;
4. Damage that occurs in shipment, due to act of God, and cosmetic damage;
5. Signal reception problems and failures due to line power surge;
6. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus (Needle) are covered for 90 days from the date of purchase;
7. Accessories;
8. Batteries (except that Rechargeable Batteries are covered for 90 days from the date of purchase); from the date of purchase);

There are no other express warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

JVC SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty lasts, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

JVC COMPANY OF AMERICA
DIVISION OF US JVC CORP.

1700 Valley Road
Wayne, New Jersey 07470

REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY, THIS WARRANTY DOES NOT APPLY. FOR DETAILS OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

For customer use:
Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

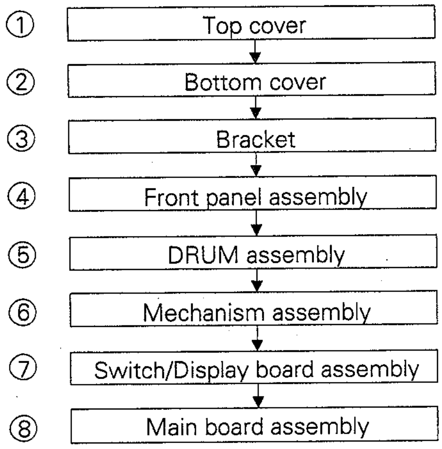
Model No.: ____________ Serial No.: ____________

Purchase date: ____________ Name of dealer: ____________

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	4(S1)	
②	BOTTOM COVER	D2	(S2), 2(S3), 7(L1)	
③	BRACKET	D3	2(S4)	
④	FRONT PANEL ASSEMBLY	D4	9(L2), (S5), 2(L3), CN3012(WR1), CN7191(WR2), CN7192(WR3), JACK BOARD ASSY	<NOTE 1> <NOTE 2>
(1)	(2)	(3)	(4)	(5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.

(2) Part name to be removed or installed.

(3) Fig.No. showing procedure or part location

(4) Identification of part to be removed,unhooked,unlocked, released,unpluged,unclamped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, CNxx(WRxx) = Remove the wire (WRxx) from the connector (CNxx).

NOTE: *The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.*

(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	4(S1)	
②	BOTTOM COVER	D2	(S2), 2(S3), 7(L1)	
③	BRACKET	D3	2(S4)	
④	FRONT PANEL ASSEMBLY	D4	9(L2), (S5), 2(L3), CN3012(WR1), CN7191(WR2), CN7192(WR3), JACK BOARD ASSY	<NOTE 1> <NOTE 2>
⑤	DRUM ASSEMBLY	D5	3(S6), 4(L4), (L5), (P1), CN1(WR4), CN1(WR5), INERTIA PLATE, ROLLER ARM ASSY	<NOTE 2>
⑥	MECHANISM ASSEMBLY	D6	2(S7),2(S8),2(L6), CN1(WR6)	<NOTE 2> <NOTE 3>
⑦	SWITCH/DISPLAY BOARD ASSEMBLY	D7	8(L7), (L8), CN7001(WR7), REC SAFETY BOARD ASSY	<NOTE 2> <NOTE 4>
⑧	MAIN BOARD ASSEMBLY	D8	2(S9), (S10), (S11), (L9), CN1902(WR8), GR BOARD ASSY	

<NOTE1>

- Before attaching the Front panel assembly, ensure that the door opener ⓐ is in the lower position.

<NOTE2>

- When inserting the flat wire into the connector, be careful not to make a mistake in the positioning of its electrodes.

<NOTE3>

- When it is required to remove the screws (S7) retaining the Mechanism assembly, please refer to the "Procedures for Lowering the Cassette holder assembly"(See on pages 1-3).
- When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.
- When attaching the Mechanism assembly, be careful not to damage the sensors and switches on the Main board assembly. (D3001: LED, Q3002: Start sensor, Q3003: End sensor, S3002: S tape detect switch).

<NOTE4>

- The REC safety board assembly is attached to the Switch/Display board assembly. It is therefore necessary to remove the REC safety board assembly before removing the Switch/Display board assembly.

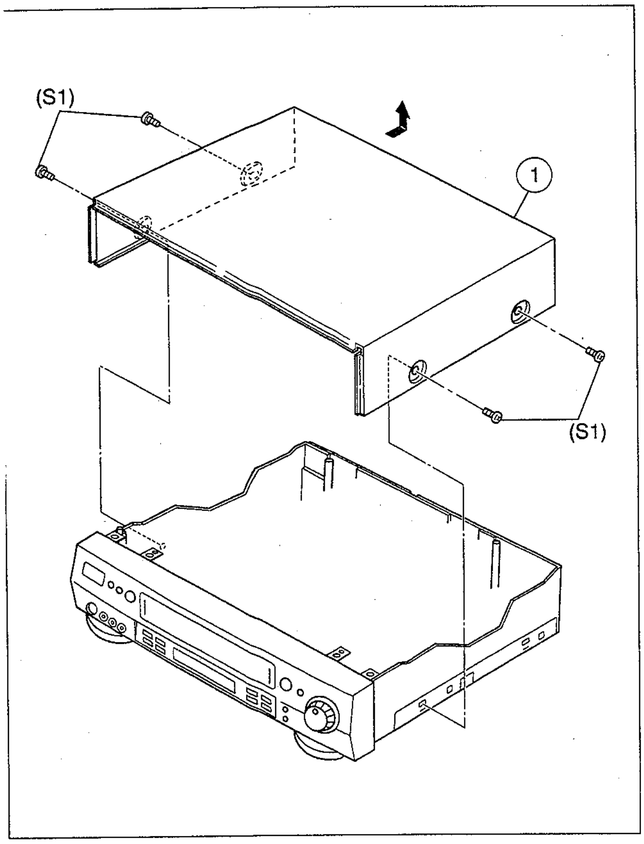


Fig. D1

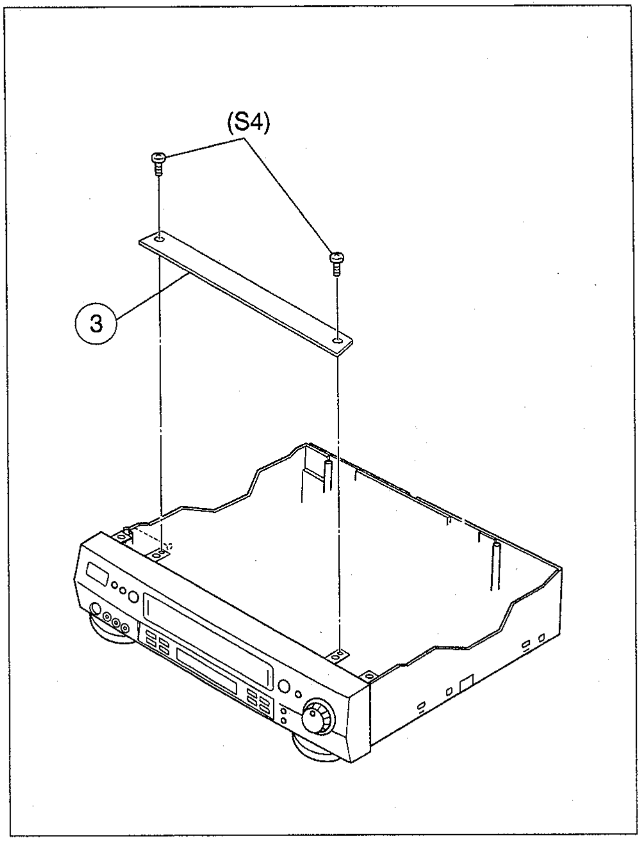


Fig. D3

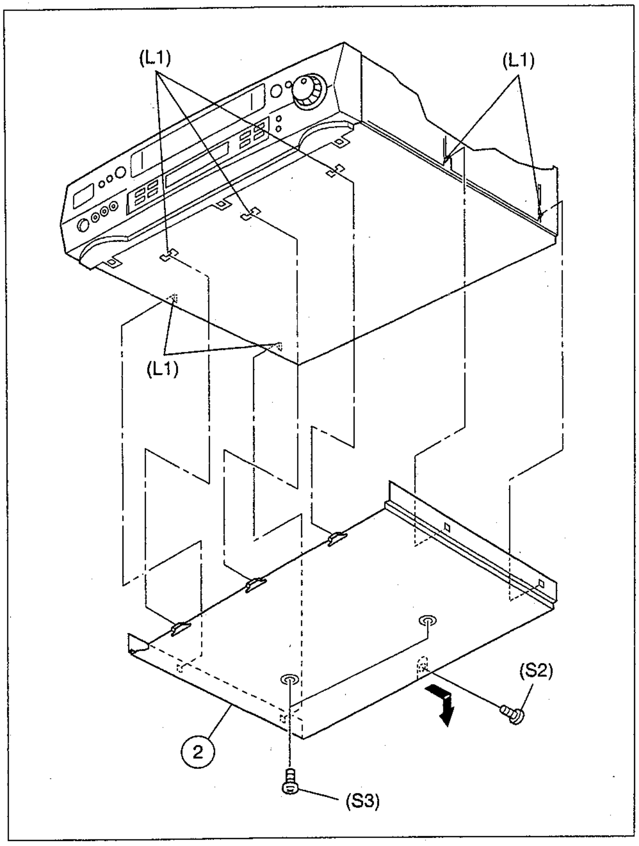

(L1)
(L1)
(L1)
(S2)
2
(S3)

Fig. D2

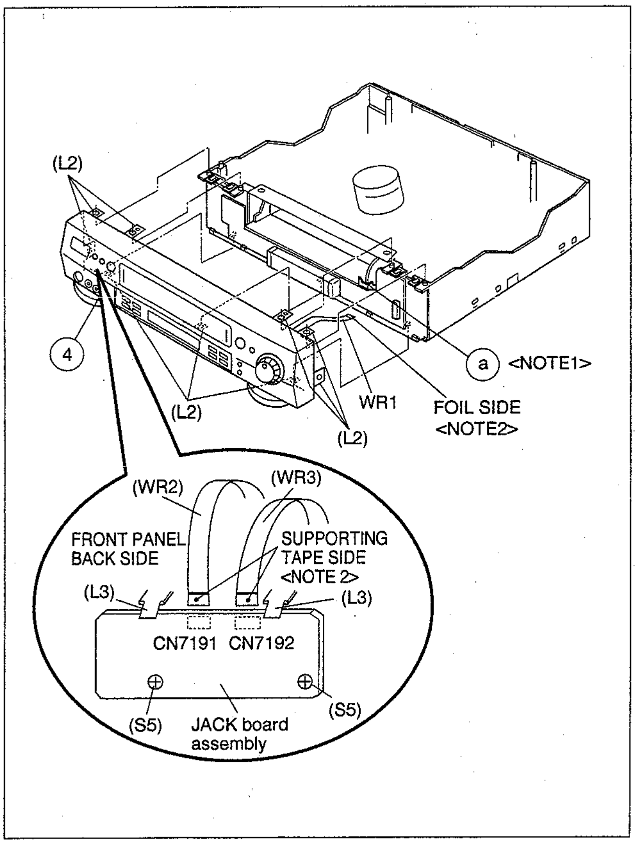

(L2)
4
(L2)
(L2)
a <NOTE1>
WR1
FOIL SIDE <NOTE2>
(WR2)
(WR3)
FRONT PANEL BACK SIDE
SUPPORTING TAPE SIDE <NOTE 2>
(L3)
(L3)
CN7191
CN7192
(S5)
(S5)
JACK board assembly

Fig. D4

NOTE : When installing the DRUM assembly, secure the screws (S6) in the order of A, B, C.

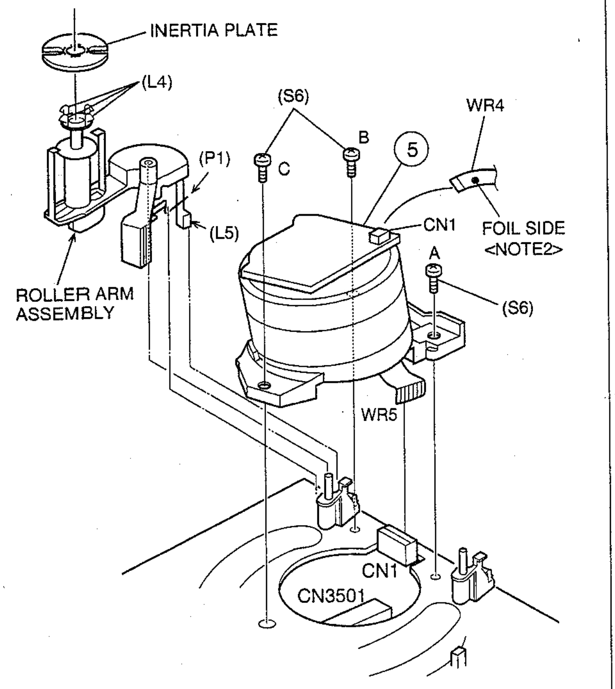

INERTIA PLATE
(L4)
(S6)
B
C
WR4
⑤
(P1)
(L5)
CN1
FOIL SIDE <NOTE2>
A
(S6)
ROLLER ARM ASSEMBLY
WR5
CN1
CN3501

Fig. D5

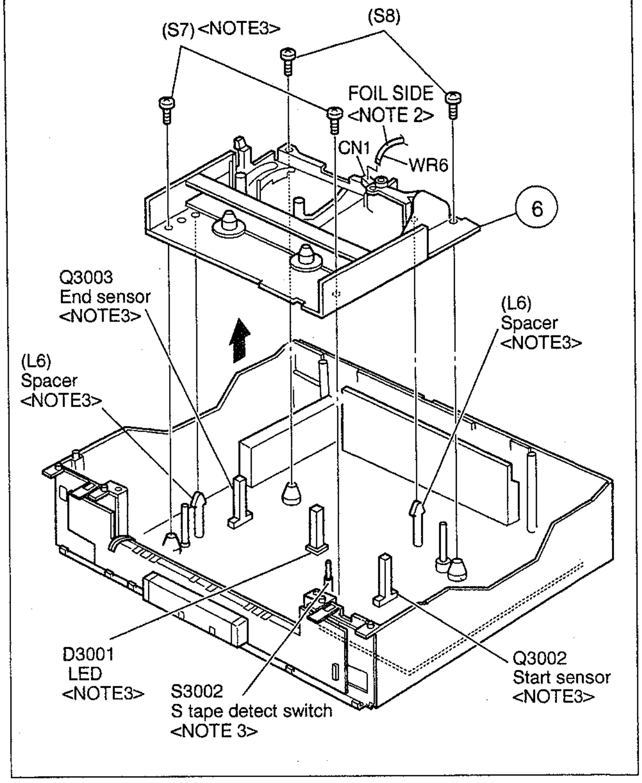

(S7)<NOTE3>
(S8)
FOIL SIDE <NOTE 2>
CN1
WR6
⑥
Q3003 End sensor <NOTE3>
(L6) Spacer <NOTE3>
(L6) Spacer <NOTE3>
D3001 LED <NOTE3>
S3002 S tape detect switch <NOTE 3>
Q3002 Start sensor <NOTE3>

Fig. D6

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

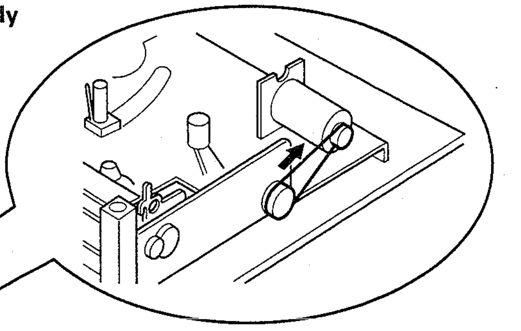


Fig. 2

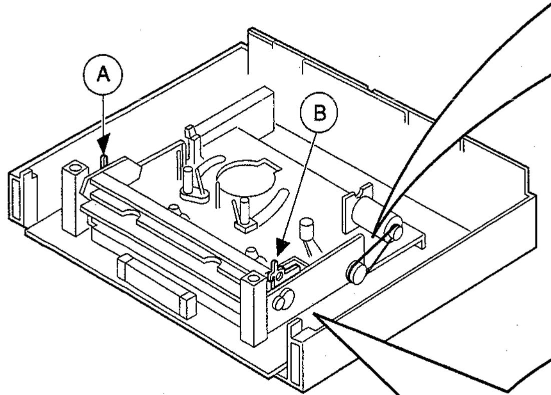


Fig. 1

Turn the loading motor pulley in the direction as indicated by Fig.2. As bothⒶandⒷlevers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of Ⓐ,Ⓑ,Ⓑ,Ⓐ. When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

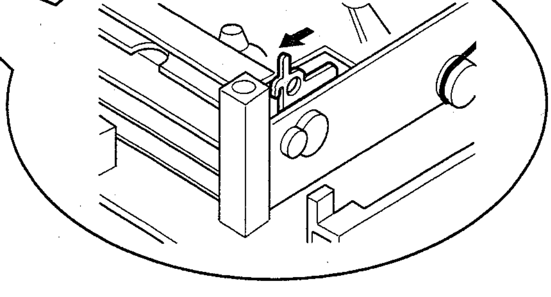


Fig. 3

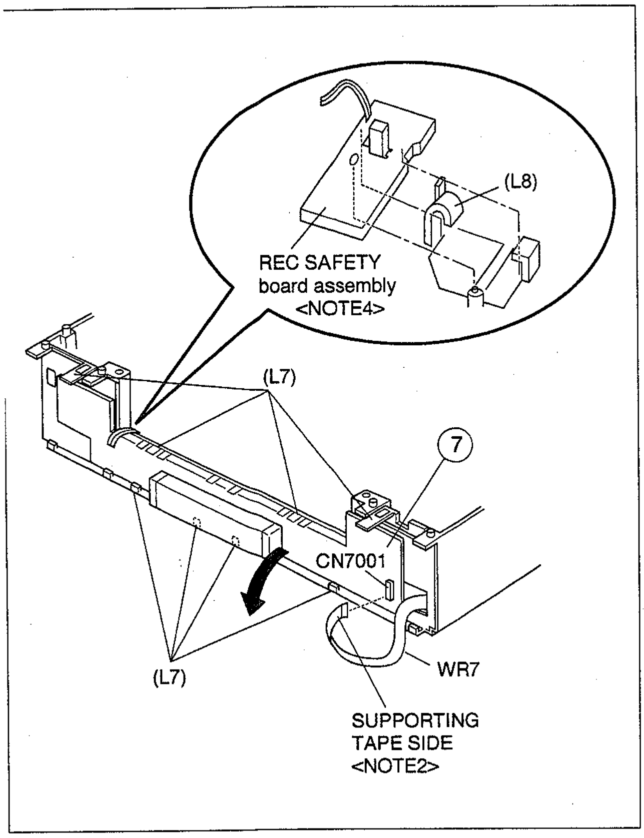


Fig. D7

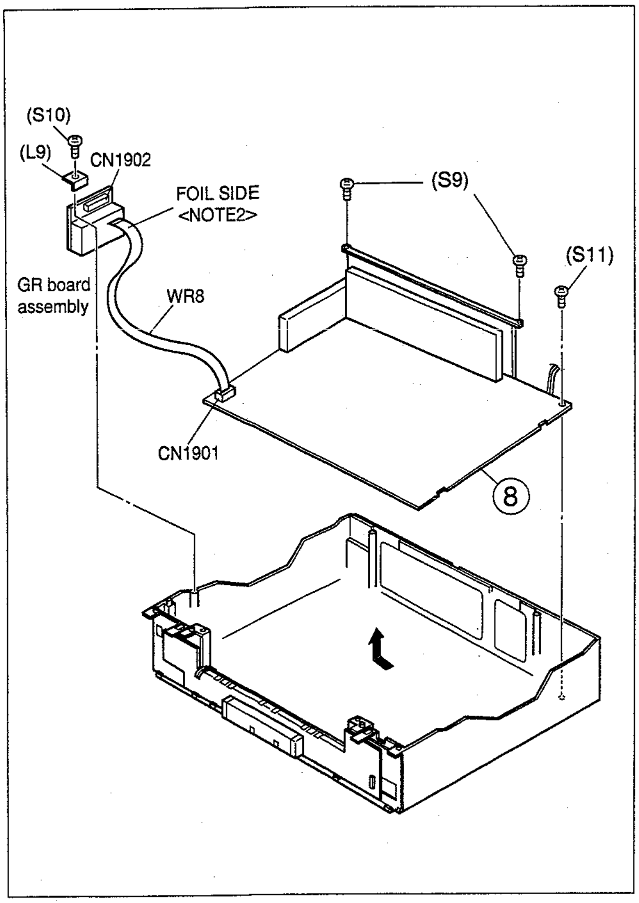


Fig. D8

1.4 SERVICE POSITION

In order to facilitate diagnosis and the repair of the Mechanism assembly, this unit is constructed so as to allow the Mechanism and Main board assemblies to be removed together from the Chassis assembly.

1.4.1 How to take out the Mechanism and Main board assemblies

(1) Remove the Top cover, Bracket, Front panel assembly and JACK board assembly. (Refer to page 1-2 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) Lower the cassette holder, and make the preparations required in order to remove the screws from the Mechanism assembly. (Refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(3) Take out 2 screws Ⓐ and 2 screws Ⓑ as shown in Fig. 1-4-1.

(4) Remove the flat wire from CN3011 on the Main board assembly.

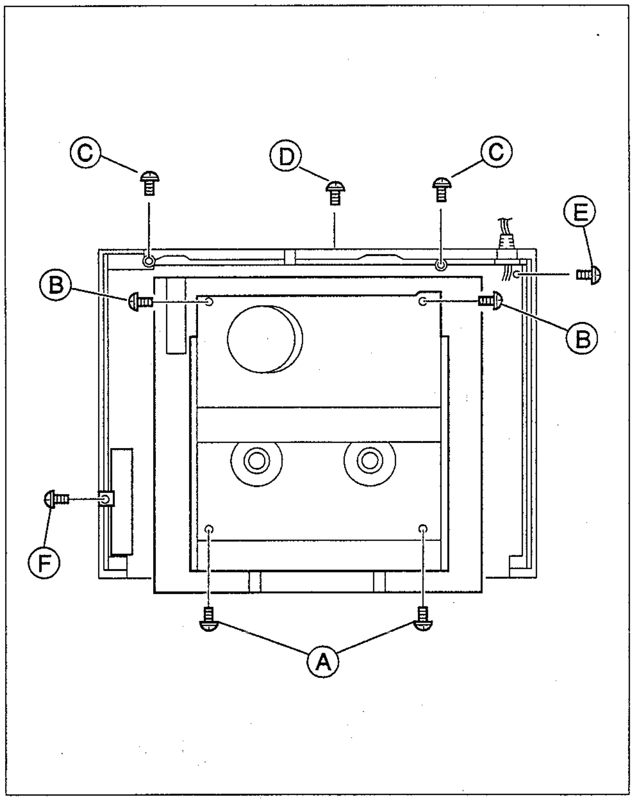


Fig. 1-4-1

(5) Take out 2 screws Ⓒ, 1 screw Ⓓ and 1 screw Ⓔ as shown in Fig. 1-4-1.

(6) Take out 1 screw Ⓕ as shown in Fig. 1-4-1, and remove the GR board assembly. (Take care not to pull the flat wire (Fig. D8) from CN1902.)

(7) Remove the Main board and Mechanism assemblies together. At this stage be careful of the power cord and prongs of the jacks on the back side. (Refer to Fig. 1-4-2.)

(8) Remove the Switch/Display board assembly and REC safety board assembly. (Refer to page 1-4 of 1.3 DISASSEMBLY/ASSEMBLY METHOD. Take care not to pull the flat wire (Fig. D7) from CN7001.)

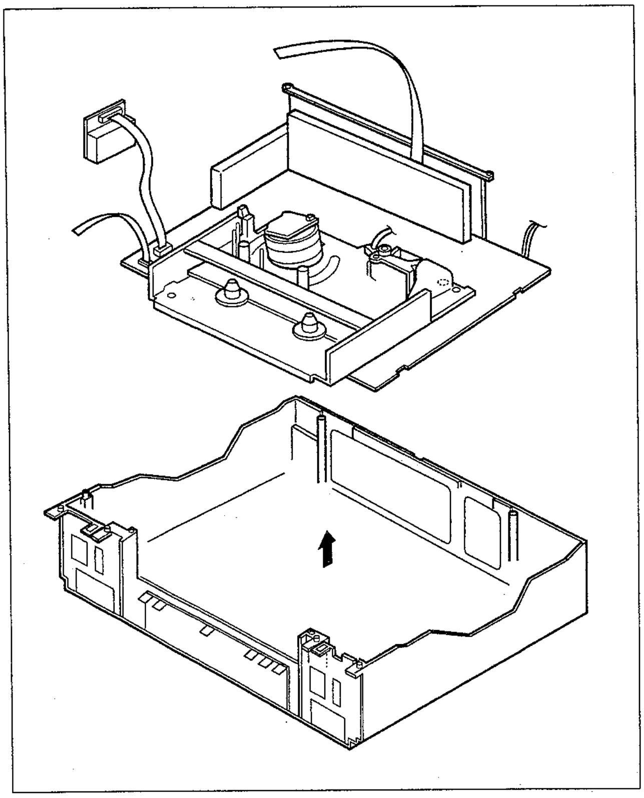


Fig. 1-4-2

(9) Place the Switch/Display board assembly, REC safety board assembly, Jack board assembly and GR board assembly on the front side of the Mechanism and Main board assemblies which was removed at the step (7), then connect the flat wire into CN3011 of the Main board assembly. (Refer to Fig. 1-4-3.)

(10) Connect the flat wires into CN7191 and CN7192 of the JACK board assembly. (Refer to Fig. 1-4-3.)

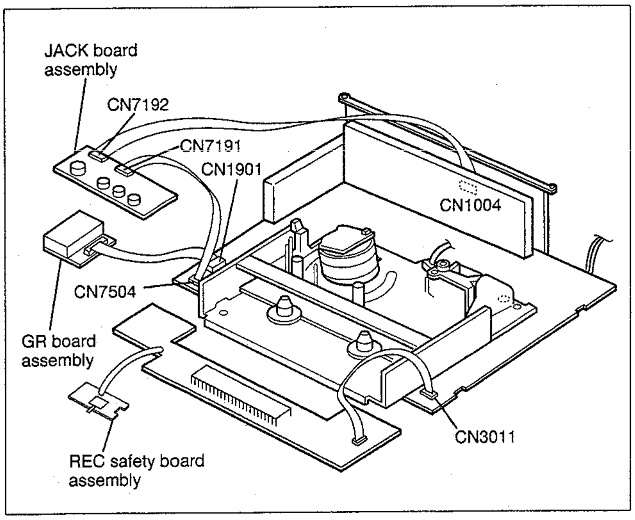


Fig. 1-4-3

(11) Connect the power cord to the wall socket, and lift the cassette holder.
(Before turning on the power make sure that there is nothing which may produce a short circuit, such as faulty soldering.)

Note: *When carrying out diagnosis and repair of the Main board assembly in the service position, be sure to ground both the Main board and the Mechanism assemblies.*

If they are improperly grounded, there may be noise on the playback picture or the FDP counter display may move even when the mechanism is kept in an inoperative status.

1.4.2 Precautions for cassette loading in the "SERVICE POSITION"

The REC safety board assembly detects cassette loading as well as cassette tabs. Therefore, after the assembly has been removed in the "SERVICE POSITION", it is required to set the switch manually on the REC safety board assembly when a cassette is loaded.

1.4.3 Cassette loading and ejection methods in the "SERVICE POSITION"(See Fig. 1-4-3).

(1) Insert a cassette halfway in the Cassette holder assembly.
(2) Set the switch on the REC safety board assembly to ON (by pressing the switch).
(3) As soon as the cassette starts to be loaded, set the switch on the REC safety board assembly to OFF (by releasing the switch).
(4) Now the desired operation (recording, playback, fast forward, rewind, etc.) is possible in this status (the status shown in Fig.1-4-3).

NOTES:
- *When performing diagnostics of the tape playback or the recording condition in the "SERVICE POSITION", enter the desired mode before turning the set upside down, and do not change the mode when performing diagnostics while the set is placed upside down. If you want to switch the mode, turn the set to the normal position (the status shown in Fig.1-4-3).*
- *In the "SERVICE POSITION", the cassette tabs cannot be detected and recording becomes possible even with a cassette with broken tabs such as the alignment tape. Be very careful not to erase important tapes.*

(5) The switch on the REC safety board assembly does not have to be operated when ejecting a tape. But be sure to turn the set to the normal position before ejecting the tape.

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Connect TPGND and TP7001 (TEST) on the Switch/Display board assembly using a jumper wire.
(3) Connect VCR to AC.
(4) Press the POWER button.
(5) With lock levers ⒶⒷ on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers ⒶⒷ, refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(6) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

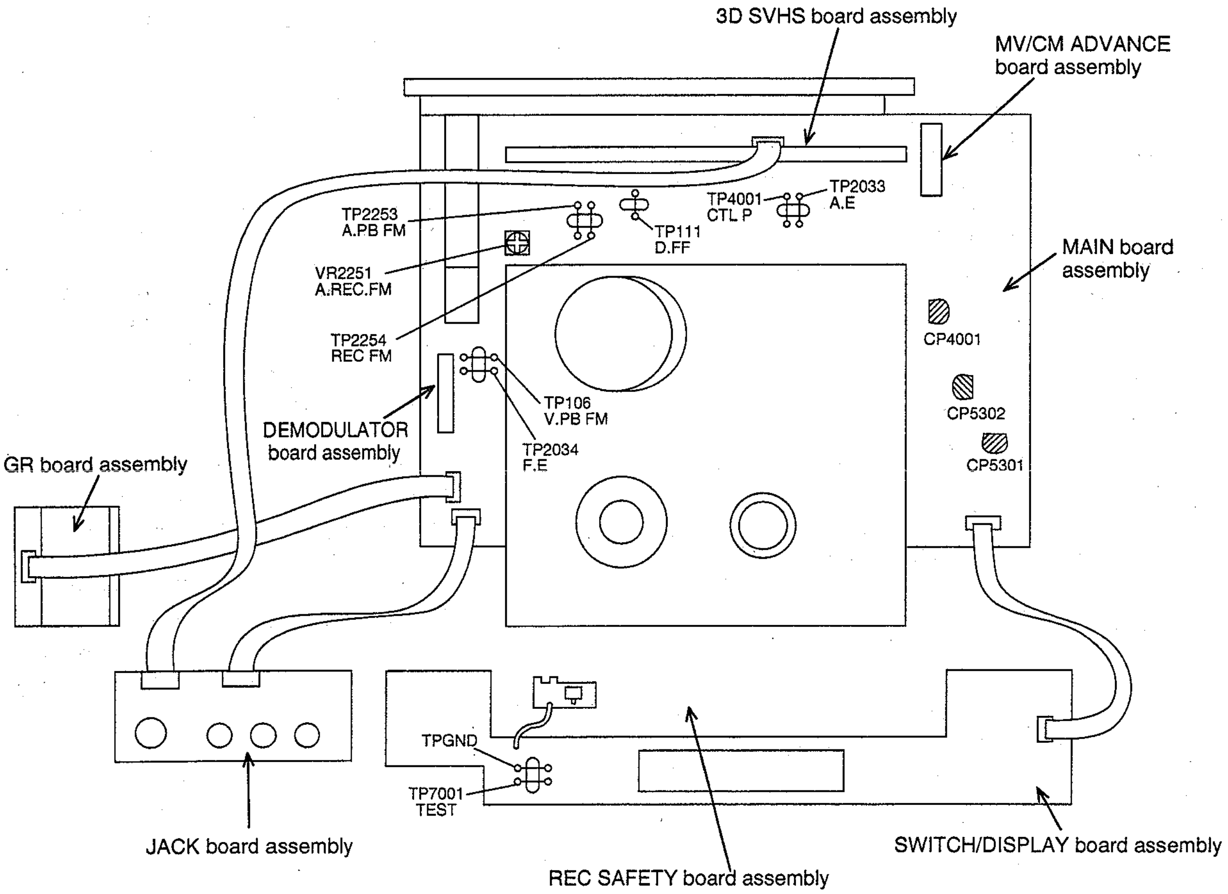

3D SVHS board assembly
MV/CM ADVANCE board assembly
TP2253 A.PB FM
TP4001 CTL P
TP2033 A.E
TP111 D.FF
MAIN board assembly
VR2251 A.REC.FM
TP2254 REC FM
CP4001
TP106 V.PB FM
CP5302
DEMODULATOR board assembly
TP2034 F.E
CP5301
GR board assembly
TPGND
TP7001 TEST
JACK board assembly
SWITCH/DISPLAY board assembly
REC SAFETY board assembly

Fig. 1-5-1

1.6 EMERGENCY DISPLAY FUNCTION

This product has the function to store the last two previous emergency faults which can be displayed in the FDP when servicing.

1.6.1 How to display record of an emergency faults

Note: *Put the unit into A mode by using the VCR remote controller. (When it is in B mode, the preset remote control codes are not accepted.)*

(1) Press the "N" button of the presetting unit and the two previous emergency faults are shown in the FDP.
(2) Press the "N" button of the presetting unit again to return to the normal mode.

[Example] E : 01 : 03
↑ ↑
Emergency fault before last
Emergency fault of the last time

[Example] E : – – : – – ← No record of emergency

1.6.3 How to clear emergency record

Press the COUNTER RESET button on the remote controller in the emergency record display mode, and the record of the emergency fault(s) is cleared.

1.6.2 Detail of emergency faults

EMG DATA	Symptom	Detect mode	Resulting mode
E : 01	Loading motor rotates for more than 8 Sec without shift to next mode.	Loading	POWER OFF
E : 02	Loading motor rotates for more than 8 Sec without shift to next mode.	Unloading	POWER OFF
E : 03	TU REEL FG input is absent. (for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 04	DRUM FF input is absent. (for more than 3 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 06	CAPSTAN FG input is absent. (for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 07	No SWD5V/12V	POWER ON	POWER OFF
E : 08	Initialized action of DD (Dynamic Drum) is not complete for less than 4 seconds.	Connect VCR to AC	STOP
E : 09	DD drive motor is not rotate for more than 2.5 seconds.	on TIME SCAN	STOP

Table 1-6-1 EMERGENCY FAULTS

1.7 SYSCON CIRCUIT

1.7.1 Syscon CPU pin function (IC3001) 1/2

PIN NO.	LABEL	IN/OUT	FUNCTION
1	CTL(+)	IN/OUT	CTL(+) SIGNAL
2	SVSS	-	GND
3	CTL(-)	IN/OUT	CTL(-) SIGNAL
4	CTLBIAS	-	CTL BIAS VOLTAGE
5	CTLFB	IN	CTL PULSE FEEDBACK
6	CTLAMPOUT	OUT	CTL PULSE OUTPUT
7	CTLSMTIN	IN	CTL PULSE INPUT
8	CFG	IN	CAPSTAN FG PULSE INPUT
9	SVCC	-	SYSTEM POWER
10	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
11	NORM/MESEC/S	IN	SVHS MODE:H
12	A EVENT DET	IN	BLANK AUDIO DETECT (DETECT ON: L) <MOVIE ADVANCE>
13	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
14	START SENSOR	IN	START SENSOR
15	END SENSOR	IN	END SENSOR
16	IND(L)	IN	AUDIO INPUT(LCH) FOR THE FDP AUDIO INDICATOR
17	DD ABS	IN	DYNAMIC DRUM POSITION DETECT
18	V EVENT DET	IN	BLANK VIDEO DETECT (DETECT ON: L) <MOVIE ADVANCE>
19	IND(R)	IN	AUDIO INPUT (RCH) FOR THE FDP AUDIO INDICATOR
20	BS ANT/AFC	IN	TUNING CLOCK
21	LED/RF AGC	-	NC
22	A.ENV/ND(L)	IN	AUDIO PB FM ENV.INPUT/NON HiFi MODE: L
23	AVSS	-	GND FOR ANALOG CIRCUIT
24	CTL GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
25	LSA	IN	MECHANISM MODE DETECT(A)
26	LSB	IN	MECHANISM MODE DETECT(B)
27	LSC	IN	MECHANISM MODE DETECT(C)
28	CAP REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
29	RC	IN	REMOTE CONTROL DATA INPUT
30	R.PAUSE/COMPU IN	IN	REMOTE PAUSE CONTROL / A/V COMPULINK INPUT
31	P50 IN	-	NC
32	LMC3	OUT	LOADING MOTOR DRIVE(3)
33	P50 OUT/COMPU OUT	OUT	NC / A/V COMPULINK OUTPUT
34	BS PCTL(H)	-	NC
35	LMC1	OUT	LOADING MOTOR DRIVE(1)
36	LMC2	OUT	LOADING MOTOR DRIVE(2)
37	P.CTL(H)	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
38	SB G(PWM)	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
39	STB/TEST	OUT	STROBE SIGNAL (FOR FDP DRIVER)
40	POWER DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
41	REC SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
42	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY
43	VSS	-	GND
44	RMO	OUT	REMOTE CONTROL OUTPUT FOR CABLE BOX
45	VCC	-	SYSTEM POWER
46	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL (REC:H)
47	SUB DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR SUB CPU
48	SUB CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR SUB CPU
49	I2C DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR THE ON-SCREEN IC
50	I2C CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR THE ON-SCREEN IC
51	S.DATA TOSYS	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER
52	S.DATA FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
53	S.CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
54	SP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
55	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
56	EDS(H)	OUT	EDS ON: H

Table 1-7-1 SYSCON CPU pin function(1/2)

1.7.2 Syscon CPU pin function (IC3001) 2/2

PIN NO.	LABEL	IN/OUT	FUNCTION
57	TU CE	OUT	CHIP ENABLE OF THE TUNER UNIT
58	EV MASK	IN	EVENT LATCH PULSE <MOVIE ADVANCE>
59	EE(L)/DDFG	OUT/IN	EE/PB CONTROL (EE MODE:L)/DYNAMIC DRUM FG INPUT
60	TU CLK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
61	TU DATA	OUT	TUNING DATA
62	FWE	-	NC
63	NMI(L)	-	NC
64	X2	-	TIMER CLOCK (32.768KHz)
65	X1	-	TIMER CLOCK (32.768KHz)
66	RES(L)	-	RESET TERMINAL (RESETON:L)
67	OSC1(IN)	-	MAIN SYSTEM CLOCK(10MHz)
68	VSS	-	GND
69	OSC2(OUT)	-	MAIN SYSTEM CLOCK(10MHz)
70	VCC	-	SYSTEM POWER
71	MODE	-	NC
72	TU A MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE:H)
73	TU V MUTE(H)	-	NC
74	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
75	I2C CLK2	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
76	I2C DATA2	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
77	DDCFWD	OUT	DYNAMIC DRUM CONTROL (FORWARD)
78	DDCREV	OUT	DYNAMIC DRUM CONTROL (REVERSE)
79	DDSPDCTL	OUT	DYNAMIC DRUM SPEED CONTROL
80	V.P.CTL	OUT	V.PULSE CONTROL
81	EDS CS	OUT	DIGITAL SUB (EDS) IC CHIP ENABLE
82	VCC	-	SYSTEM POWER
83	SLOW P	OUT	RECEIVING TIMING OUTPUT OF SPECIAL PLAYBACK PICTURE
84	VSS	-	GND
85	SP SHORT(H)	OUT	MODE SELECT
86	LP SHORT(H)	OUT	MODE SELECT
87	FLY ON(H)	OUT	FLYING ERASE ON:H
88	A.REC ST(H)	OUT	HIFI AUDIO SOUND RECORDING START
89	ET REC(H)	OUT	SVHS-ET REC MODE:H
90	HEAD SEL	OUT	HEAD SELECT (EP HEAD: H, SP HEAD: L)
91	OSD CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
92	SYNC DET(H)	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
93	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE:L)
94	JSB/STLB	IN	INPUT FOR THE JOG SHUTTLE
95	SHTL(L)/JOGA	IN	INPUT FOR THE JOG SHUTTLE
96	FRONT(H)	OUT	SELECT SIGNAL FOR THE FRONT INPUT (FRONT:H)
97	JSA/STLA	IN	INPUT FOR THE JOG SHUTTLE
98	C.SYNC	IN	COMPOSITE SYNC
99	A.FF	OUT	AUDIO FF OUTPUT
100	V.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
101	CAPPWM	OUT	CAPSTAN MOTOR CONTROL
102	DRUMPWM	OUT	DRUM MOTOR CONTROL
103	SUB RESET	OUT	SUB CPU RESET (RESET:L)
104	S.CASS(H)	IN	DETECTION SIGNAL FOR SVHS CASSETTE (SVHS:H)
105	SP(H)/S PB(H)	OUT	SP MODE:H
106	LOCK(L)	IN	TUNING PLL LOCK DETECT:L
107	DPG	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
108	DFG	IN	DRUM FG PULSE INPUT
109	VCC	-	SYSTEM POWER
110	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
111	VSS	-	GND
112	CTLREF	-	CTL REFERENCE VOLTAGE

Table 1-7-2 SYSCON CPU pin function(2/2)

SECTION 2
MECHANISM ADJUSTMENT

2.1 BEFORE STARTING REPAIR AND ADJUSTMENT

2.1.1 Precautions

(1) Unplug the power cable of the main unit before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When installing the front panel assembly, be sure to hook the lug on the back side of the cassette door to the door opener of the cassette holder. If this operation is neglected it will not be possible to remove the cassette when ejecting because the housing door cannot be opened.

2.1.2 Checking for Proper Mechanical Operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See 1.5 MECHANISM SERVICE MODE.)

2.1.3 Manually Removing the Cassette Tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, bracket and front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) Unload the cassette by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-1.)
(3) Bring the pole base assembly (supply or take-up side) to a pause when it reaches the position where it is hidden behind the cassette tape.
(4) Move the top guide toward the drum while holding down the lug Ⓐ of the bracket retaining the top guide. Likewise hold part Ⓑ down and remove the top guide. Section Ⓒ of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-2.)
(5) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

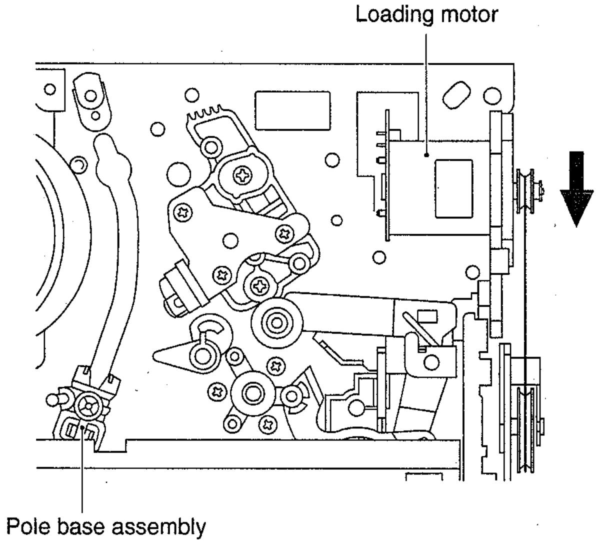


Fig. 2-1-1

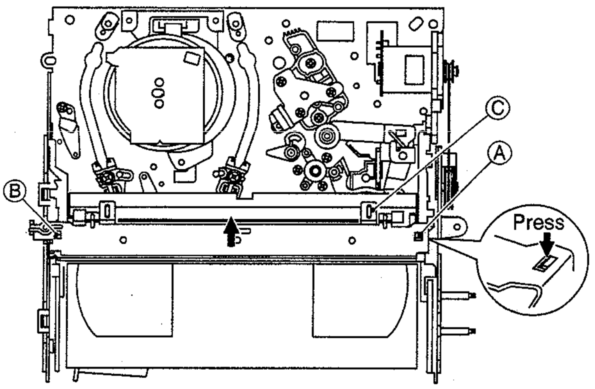


Fig. 2-1-2

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3.)

(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-4.)

(4) In the same way as in the electrical failure instructions in 2.1.3 (4), remove the top guide.

(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.

(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

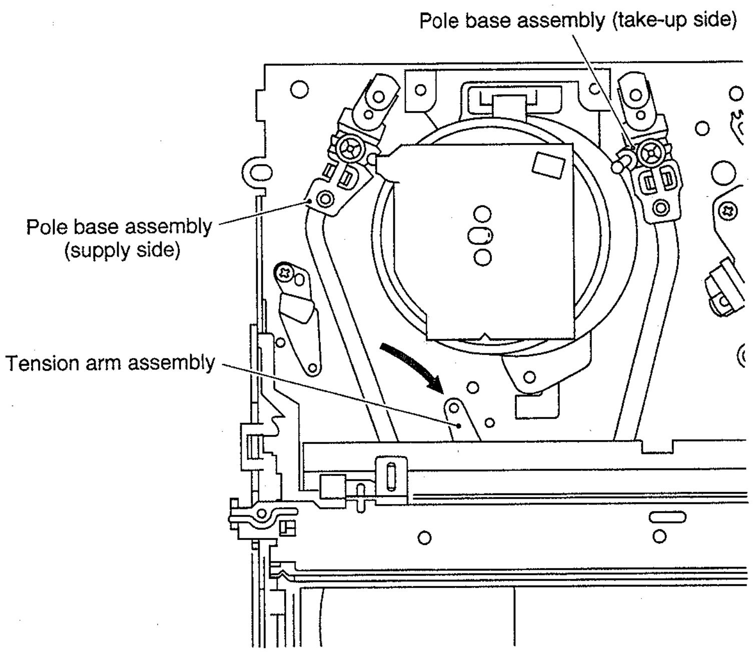

Pole base assembly (take-up side)
Pole base assembly (supply side)
Tension arm assembly

Fig. 2-1-3

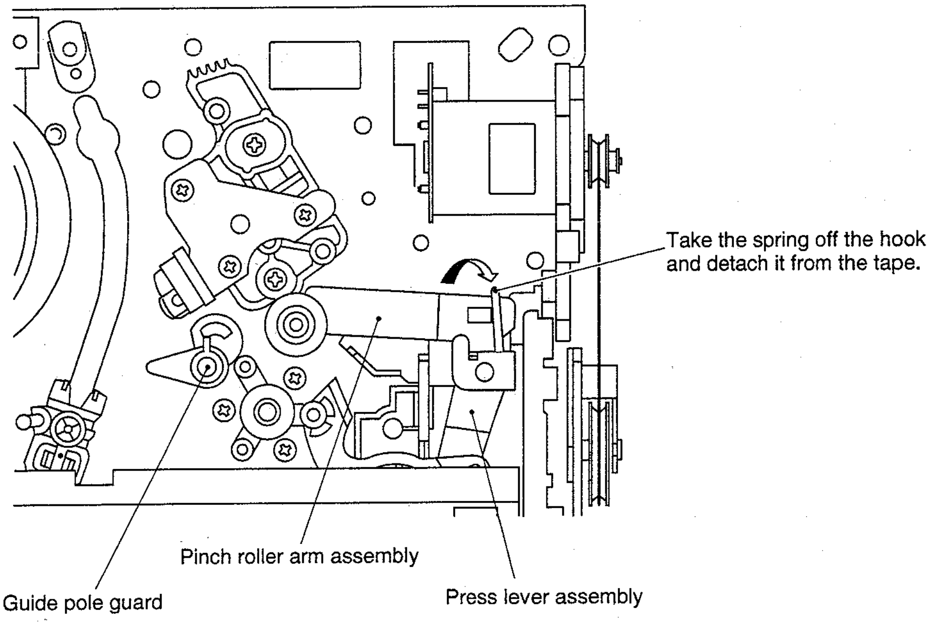

Take the spring off the hook, and detach it from the tape.
Pinch roller arm assembly
Guide pole guard
Press lever assembly

Fig. 2-1-4

2.1.4 Jigs and Tools Required for Adjustment

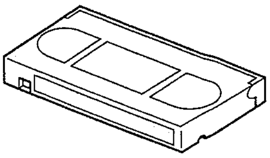
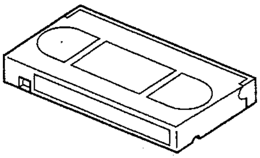
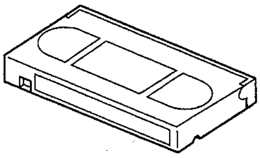
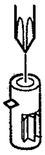
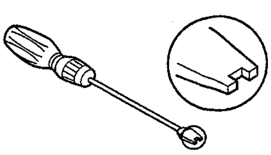
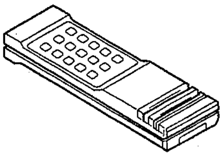
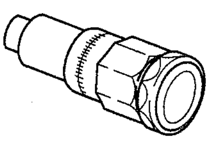
Alignment tape (SP) MHP	Alignment tape (EP) MHP-L	Back tension cassette gauge PUJ48076-2	A/C head position bit PTU94010
			
Roller driver PTU94002	Presetting unit PTU94008	Torque gauge PUJ48075-2	
			

Table 2-1-1 Jigs and tools required for adjustment

2.1.5 Maintenance and Inspection

1. Location of major mechanical parts

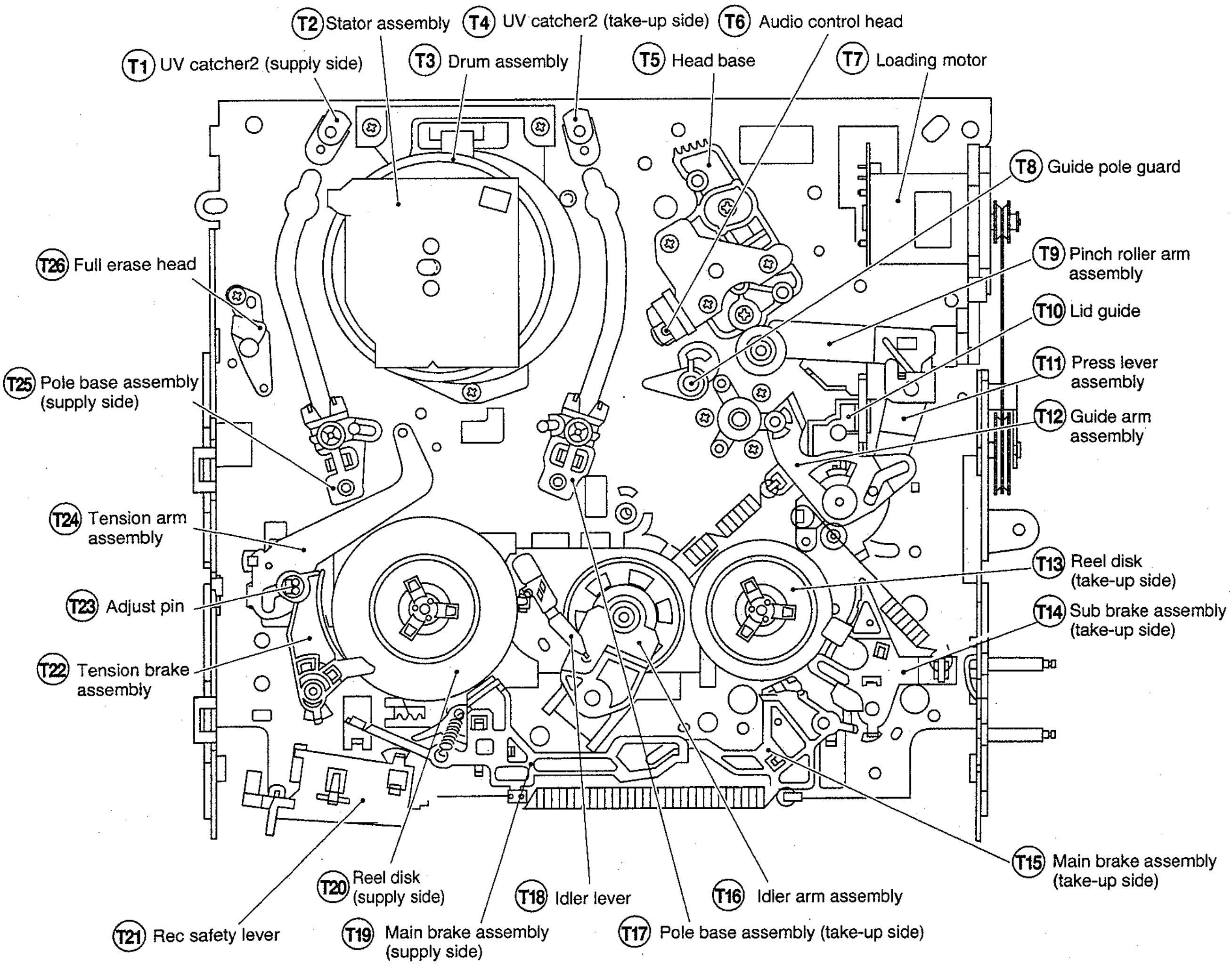

T2 Stator assembly
T4 UV catcher2 (take-up side)
T6 Audio control head
T1 UV catcher2 (supply side)
T3 Drum assembly
T5 Head base
T7 Loading motor
T8 Guide pole guard
T9 Pinch roller arm assembly
T10 Lid guide
T11 Press lever assembly
T12 Guide arm assembly
T13 Reel disk (take-up side)
T14 Sub brake assembly (take-up side)
T15 Main brake assembly (take-up side)
T16 Idler arm assembly
T17 Pole base assembly (take-up side)
T18 Idler lever
T19 Main brake assembly (supply side)
T20 Reel disk (supply side)
T21 Rec safety lever
T22 Tension brake assembly
T23 Adjust pin
T24 Tension arm assembly
T25 Pole base assembly (supply side)
T26 Full erase head

Fig. 2-1-5 Mechanism assembly top side

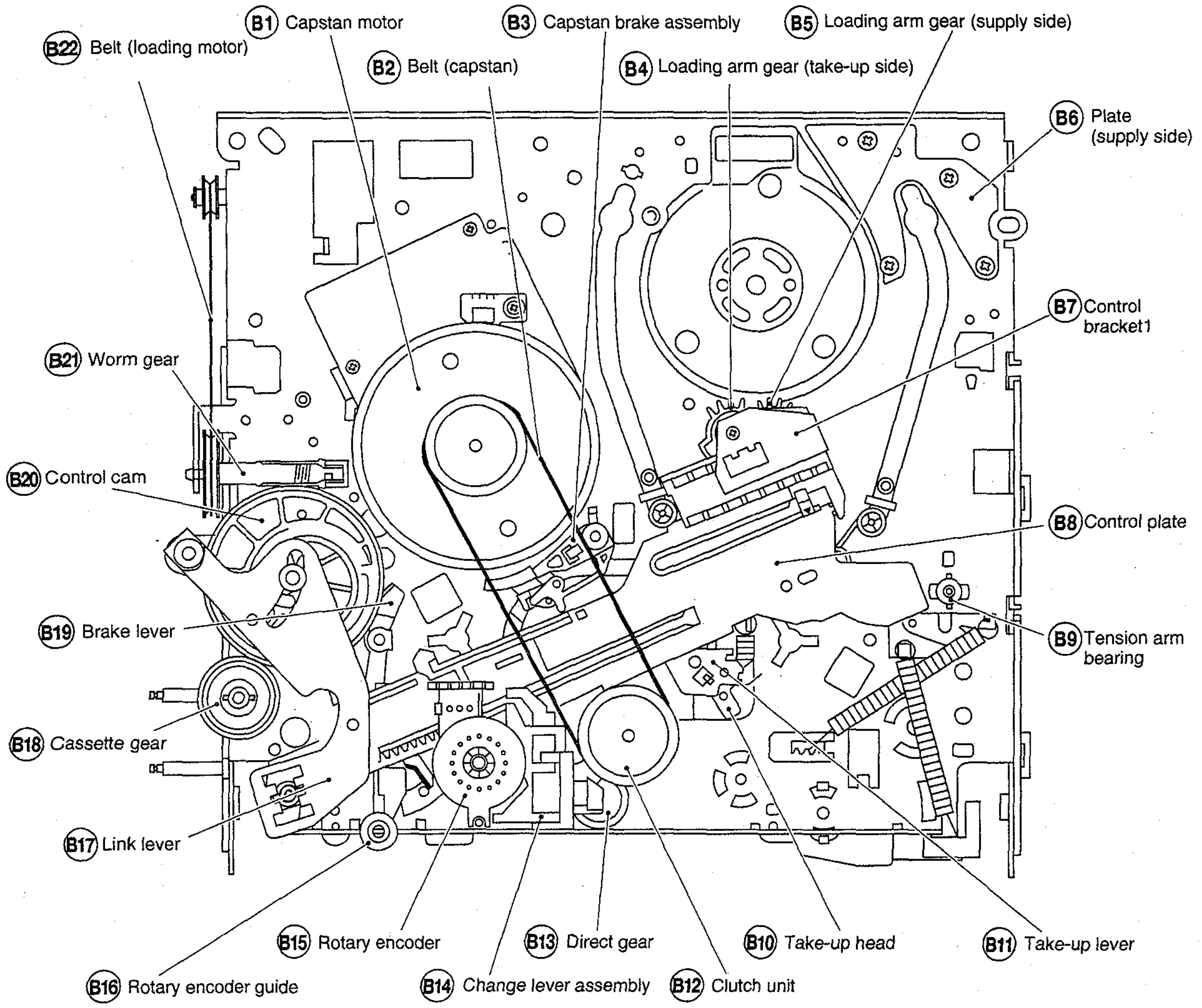

B22 Belt (loading motor)
B1 Capstan motor
B2 Belt (capstan)
B3 Capstan brake assembly
B4 Loading arm gear (take-up side)
B5 Loading arm gear (supply side)
B6 Plate (supply side)
B7 Control bracket1
B8 Control plate
B9 Tension arm bearing
B21 Worm gear
B20 Control cam
B19 Brake lever
B18 Cassette gear
B17 Link lever
B16 Rotary encoder guide
B15 Rotary encoder
B14 Change lever assembly
B13 Direct gear
B12 Clutch unit
B10 Take-up head
B11 Take-up lever

Fig. 2-1-6 Mechanism assembly bottom side

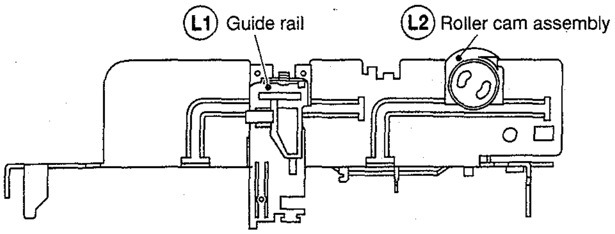

L1 Guide rail
L2 Roller cam assembly

Fig. 2-1-7 Mechanism assembly left side

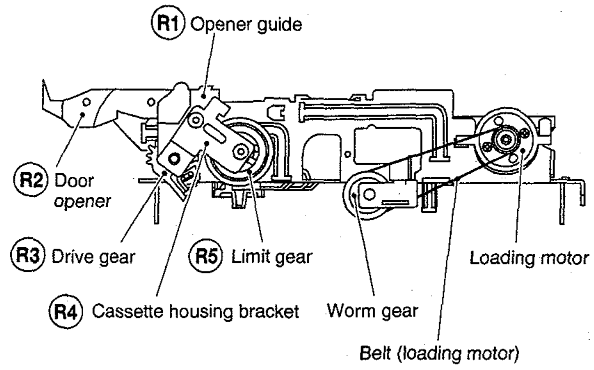

R1 Opener guide
R2 Door opener
R3 Drive gear
R5 Limit gear
Loading motor
R4 Cassette housing bracket
Worm gear
Belt (loading motor)

Fig. 2-1-8 Mechanism assembly right side

Note: *This table shows the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.*
The circled numbers (symbols and numbers) preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

	Symbols and numbers			(L1)	(L2)	(R4)	(R1)	—	—	(R3)	—	(T9)	(T12)	(T11)	(T1)(T4)	(B15)	(B12)	(B14)	(B13)	(B17)	(B21)	(B7)	(B8)	(B5)	(B4)	(B11)	(T14)	(T15)	(T13)	(T22)	(T24)	(T18)	(B19)
Symbols and numbers	Removal parts / (Reference items) Replacement parts	Front (T)/Back (B) of mechanism	Number of removal steps	Guide rail	Roller cam assembly	Cassette housing bracket	Opener guide	Relay gear	Cassette holder assembly	Drive gear	Drive arm	Pinch roller arm assembly	Guide arm assembly	Press lever assembly	UV catcher2	Rotary encoder	Clutch unit	Change lever assembly	Direct gear	Link lever	Worm gear	Control bracket1	Control plate	Loading arm gear (supply side)	Loading arm gear (take-up side)	Take-up lever	Sub brake assembly (take-up side)	Main brake assembly (take-up side)	Reel disk (take-up side)	Tension brake assembly	Tension arm assembly	Idler lever	Brake lever
(L1)	2.2.3 Guide rail	T	1																														
(L2)	2.2.3 Roller cam assembly	T	1																														
(R4)	2.2.3 Cassette housing bracket	T	1																														
(R1)	2.2.3 Opener guide	T	2			1																											
(R2)	2.2.3 Door opener	T	3			1	2																										
—	2.2.3 Relay gear	T	3			1	2																										
(R5)	2.2.3 Limit gear	T	3			1	2																										
—	2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																									
(R3)	2.2.3 Drive gear	T	4			1	2	3																									
—	2.2.3 Drive arm	T	8	1	2	3	4	5	6	7																							
(T9)	2.2.4 Pinch roller arm assembly	T	1																														
(T12)	2.2.5 Guide arm assembly	T	1																														
(T11)	2.2.5 Press lever assembly	T	3									1	2																				
(T6)	2.2.6 Audio control head	T	1																														
(T7)	2.2.7 Loading motor	T	1																														
(B1)	2.2.8 Capstan motor	T/B	1																														
(T1)(T4)	2.2.9 UV catcher2	T	1																														
(T17)	2.2.9 Pole base assembly (take-up side)	T/B	2												1																		
(T25)	2.2.9 Pole base assembly (supply side)	T/B	2												1																		
(B15)	2.2.10 Rotary encoder	B	1																														
(B12)	2.2.11 Clutch unit	B	1																														
(B14)	2.2.12 Change lever assembly	B	3													1	2																
(B13)	2.2.12 Direct gear	B	4													1	2	3															
—	2.2.12 Clutch gear1	B	5													1	2	3	4														
(B17)	2.2.13 Link lever	B	1																														
(B18)	2.2.14 Cassette gear	B	2																	1													
(B20)	2.2.14 Control cam	B	2																	1													
(B21)	2.2.14 Worm gear	B	1																														
(T10)	- Lid guide	T/B	5									1	2	3							4												
(B7)	2.2.15 Control bracket1	B	1																														
(B8)	2.2.15 Control plate	B	6													1	2	3		4		5											
(B5)	2.2.16 Loading arm gear (supply side)	B	7													1	2	3		4		5	6										
(B4)	2.2.16 Loading arm gear (take-up side)	B	8													1	2	3		4		5	6	7									
—	2.2.16 Loading arm gear shaft	B	9													1	2	3		4		5	6	7	8								
(B11)	2.2.17 Take-up lever	T/B	7													1	2	3		4		5	6										
(B10)	2.2.17 Take-up head	T/B	8													1	2	3		4		5	6			7							
—	2.2.17 Control plate guide	T/B	8													1	2	3		4		5	6			7							
(B3)	2.2.18 Capstan brake assembly	T/B	7													1	2	3		4		5	6										
(T14)	2.2.19 Sub brake assembly(take-up side)	T/B	15	1	2	3	4	5	6	7	8					9	10	11		12		13	14										
(T15)	2.2.20 Main brake assembly(take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15						
(T19)	2.2.20 Main brake assembly(supply side)	T/B	9	1	2	3	4	5	6	7	8																						
(T13)	2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15						
(T22)	2.2.21 Tension brake assembly	T/B	9	1	2	3	4	5	6	7	8																						
(T20)	2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	8																			9			
(T24)	2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																			9			
(B9)	2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																			9			
(T18)	2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	8					9	10	11		12		13	14							15	16		
(T16)	2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	8					9	10	11		12		13	14							15	16	17	
(B19)	- Brake lever	T/B	18	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15	16	17				
(B16)	- Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15	16	17				18

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note: ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

(1) See the mechanism assembly and disassembly diagrams (M4) for the lubricating or greasing spots. See Table 2-1-2 for the types of oil or grease to be used.

Type	Name	Serial No.	Symbols on the disassembly diagrams
Grease	Maltemp SH-P	KYODO-SH-P	AA
Oil	Cosmohydro HV56	COSMO-HV56	BB

Table 2-1-2 Grease and oil used for the unit

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★: Cleaning

○: Inspection or Replacement if necessary

Table 2-1-3

2.2 REPLACEMENT OF MAJOR PARTS

2.2.1 Before Starting Disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.

Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.

Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another.

(For information on phase matching of the mechanism, see the instructions on how to install individual parts.)

This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to Set the Mechanism Assembling Mode

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-1.)

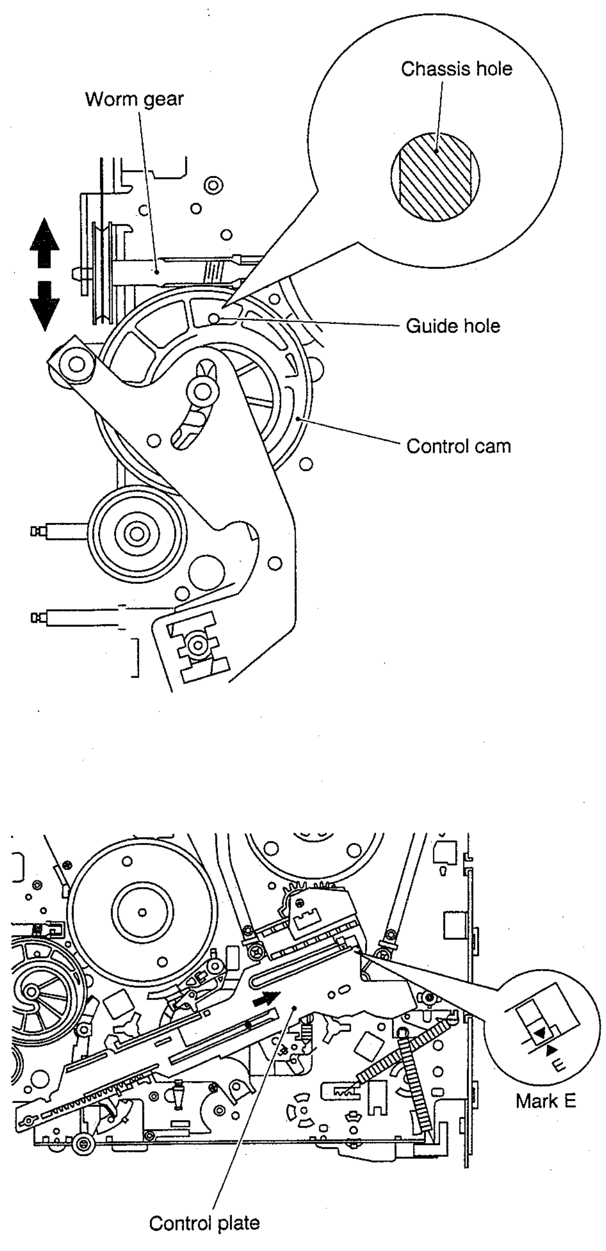

Chassis hole
Worm gear
Guide hole
Control cam
E
Mark E
Control plate

Fig. 2-2-1

2.2.3 Cassette Holder Assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-2.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

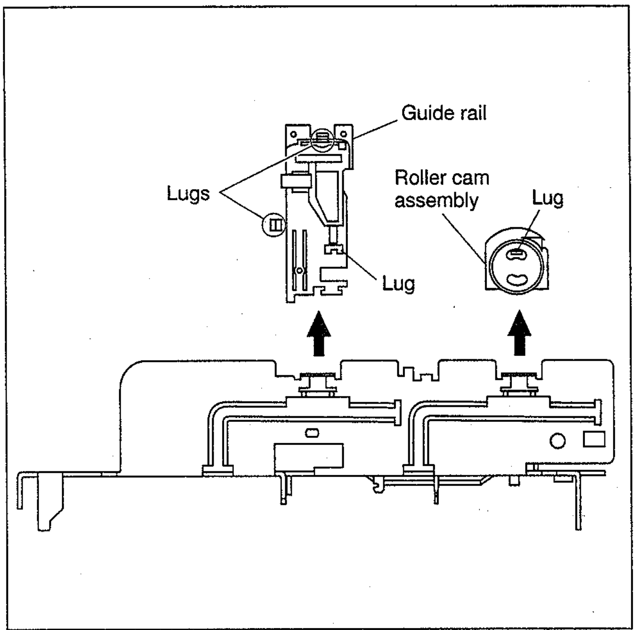

Guide rail
Lugs
Roller cam assembly
Lug
Lug

Fig. 2-2-2

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3.)

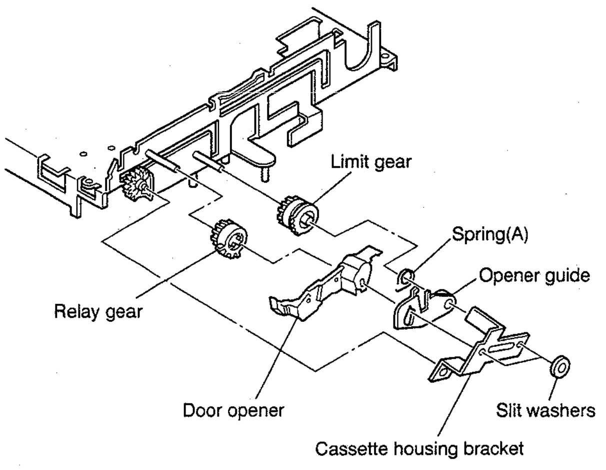

Limit gear
Spring(A)
Opener guide
Relay gear
Door opener
Slit washers
Cassette housing bracket

Fig. 2-2-3

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-4.)

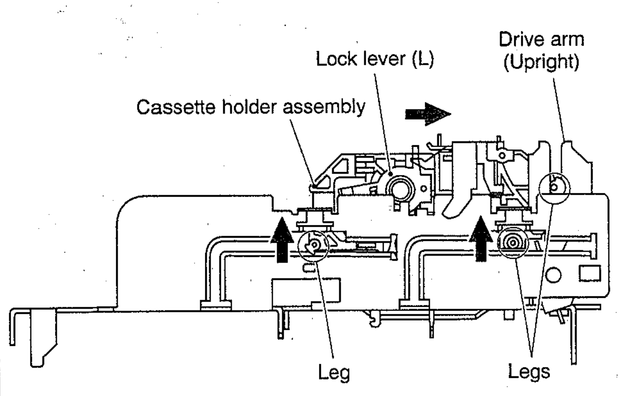

Drive arm
(Upright)
Lock lever (L)
Cassette holder assembly
Leg
Legs

Fig. 2-2-4

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs Ⓐ and Ⓑ on the right side out of the rail and also pull up the leg Ⓒ. (See Fig.2-2-5 and Fig.2-2-6.)

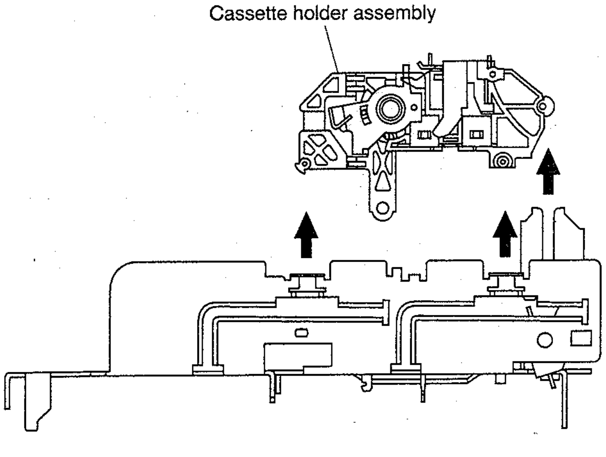

Cassette holder assembly

Fig. 2-2-5

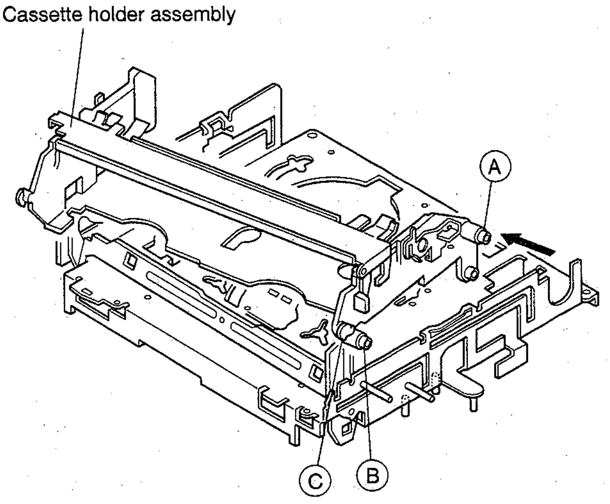

Cassette holder assembly
Ⓐ
Ⓒ
Ⓑ

Fig. 2-2-6

(6) Draw out the drive gear, and remove the drive arm.

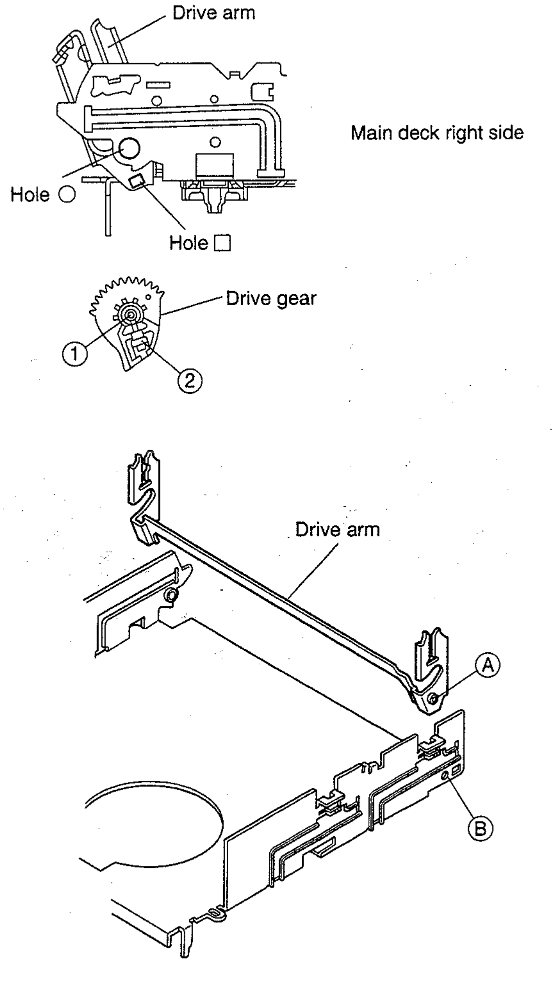

Drive arm
Main deck right side
Hole ○
Hole □
Drive gear
①
②
Drive arm
Ⓐ
Ⓑ

Fig. 2-2-7

2. How to install (Phase matching)

(1) Insert the section Ⓐ of the drive arm into the section Ⓑ of the main deck.

(2) Insert the section ① of the drive gear into the round hole, and the section ② into the square hole on the drive arm. (See Fig.2-2-7.)

(3) Hold the drive arm upright and fit the leg Ⓒ on the right side of the cassette holder assembly into the groove. (See Fig.2-2-8.)

(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs Ⓐ and Ⓑ into the rail. (See Fig.2-2-8.)

(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-9.)

(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.

(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-10.)

(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-10.)

(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

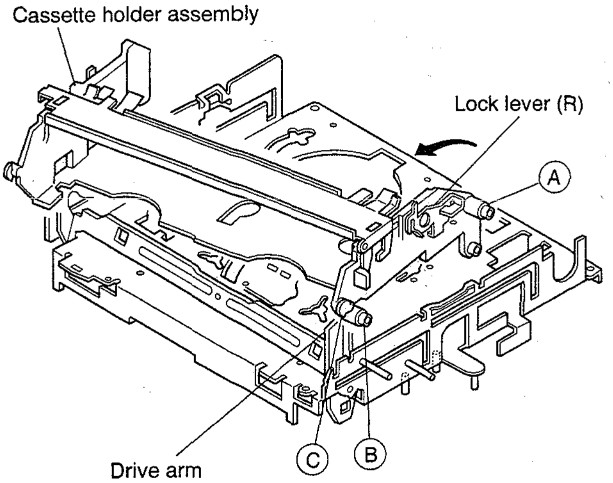

Cassette holder assembly
Lock lever (R)
A
Drive arm
C
B

Fig. 2-2-8

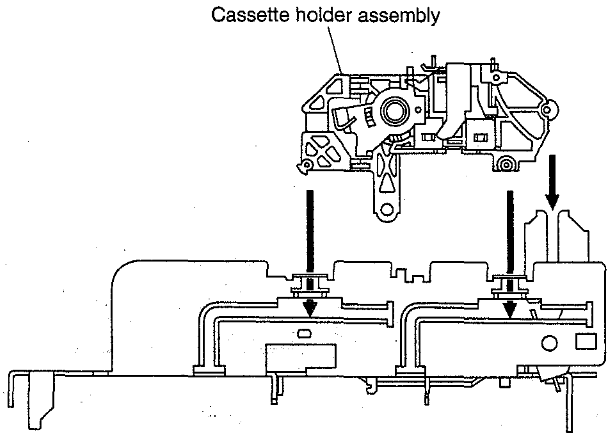

Cassette holder assembly

Fig. 2-2-9

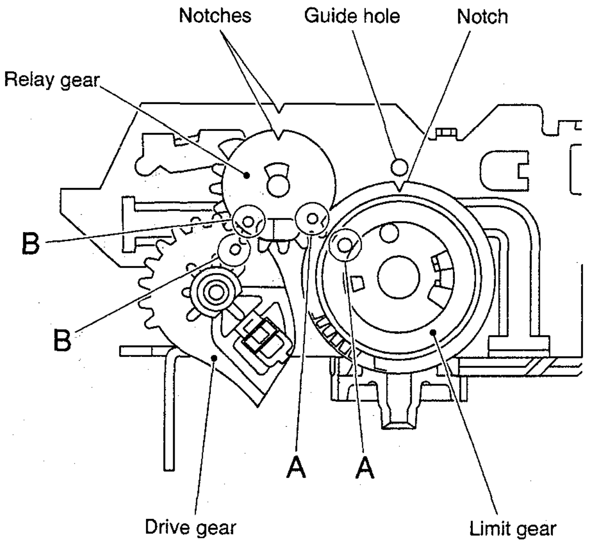

Notches
Guide hole
Notch
Relay gear
B
B
A
A
Drive gear
Limit gear

Fig. 2-2-10

2.2.4 Pinch Roller Arm Assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.

(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-11.)

(3) Remove the pinch roller arm assembly by pulling it up.

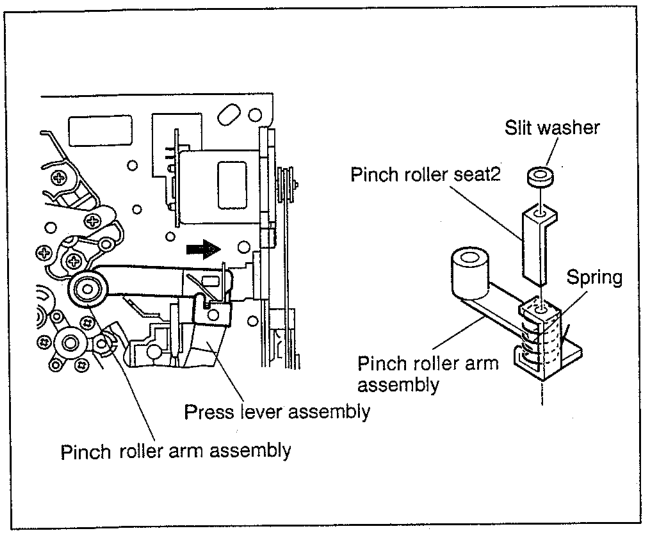

Slit washer
Pinch roller seat2
Spring
Pinch roller arm assembly
Press lever assembly
Pinch roller arm assembly

Fig. 2-2-11

2.2.5 Guide Arm Assembly and Press Lever Assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.

(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-12.)

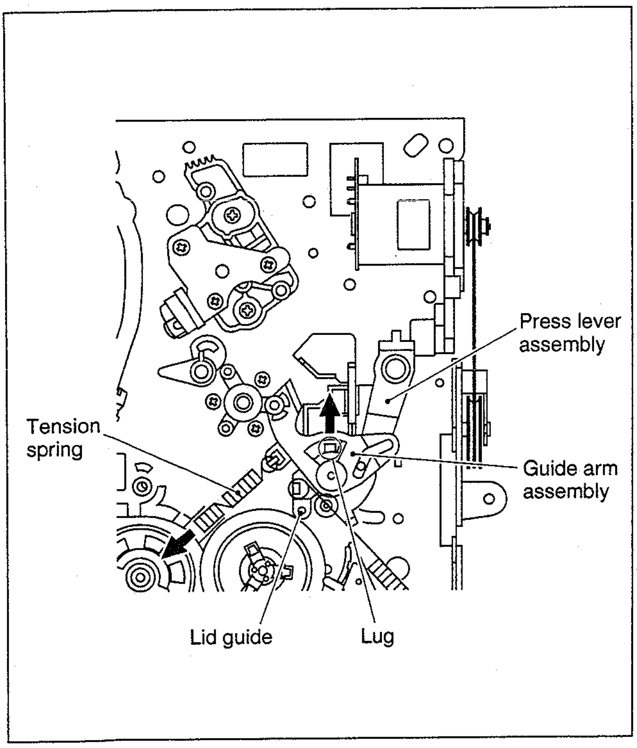

Press lever assembly
Tension spring
Guide arm assembly
Lid guide
Lug

Fig. 2-2-12

2.2.6 Audio Control Head

1. How to remove

(1) Remove the two screws (A) and remove the audio control head together with the head base.

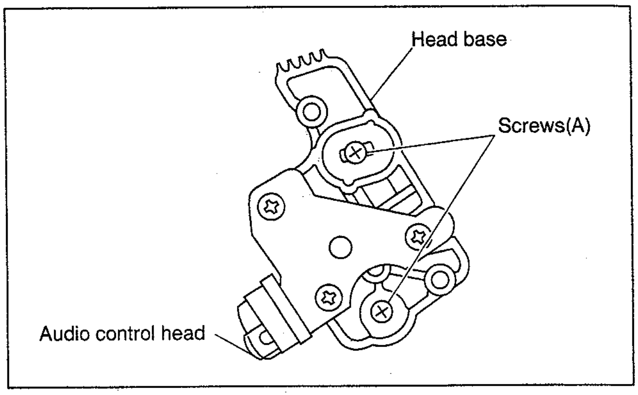

Head base
Screws(A)
Audio control head

Fig. 2-2-13

(2) When replacing only the audio control head, remove the three screws (B) while controlling the compression spring.

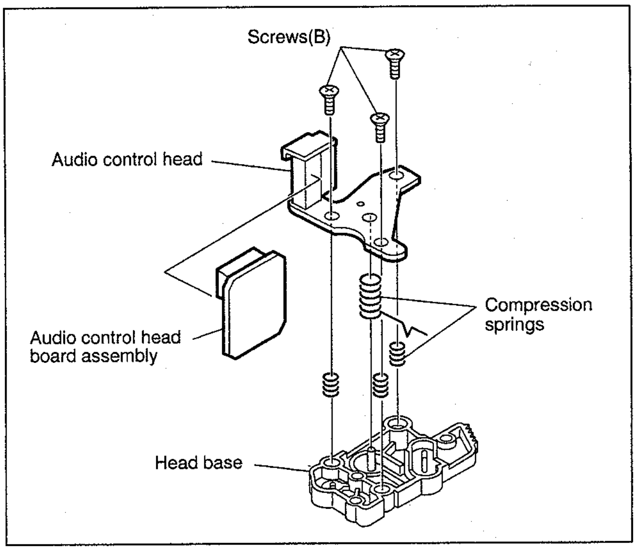

Screws(B)
Audio control head
Compression springs
Audio control head board assembly
Head base

Fig. 2-2-14

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-15. Also make sure that the screw center is brought into alignment with the center position of the slot.

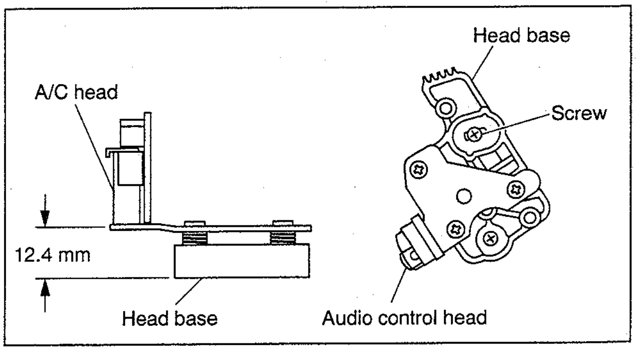

Head base
A/C head
Screw
12.4 mm
Head base
Audio control head

Fig. 2-2-15

2.2.7 Loading Motor

1. How to remove

(1) Remove the belt wound around the worm gear.

(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.

(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)

(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-16.

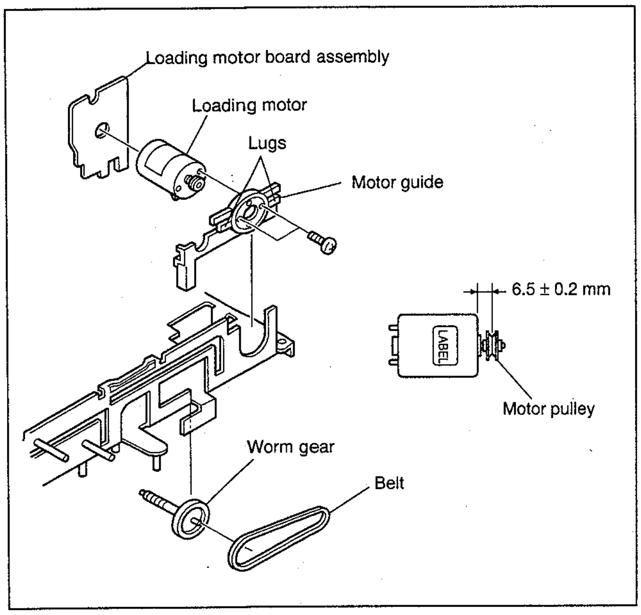


Fig. 2-2-16

2.2.8 Capstan Motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.

(2) Remove the three screws (A) and remove the capstan motor.

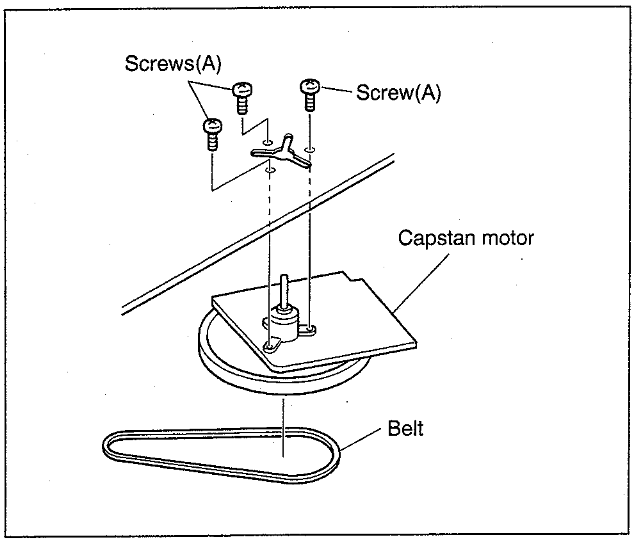


Fig. 2-2-17

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.

(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.

(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.) Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-18.

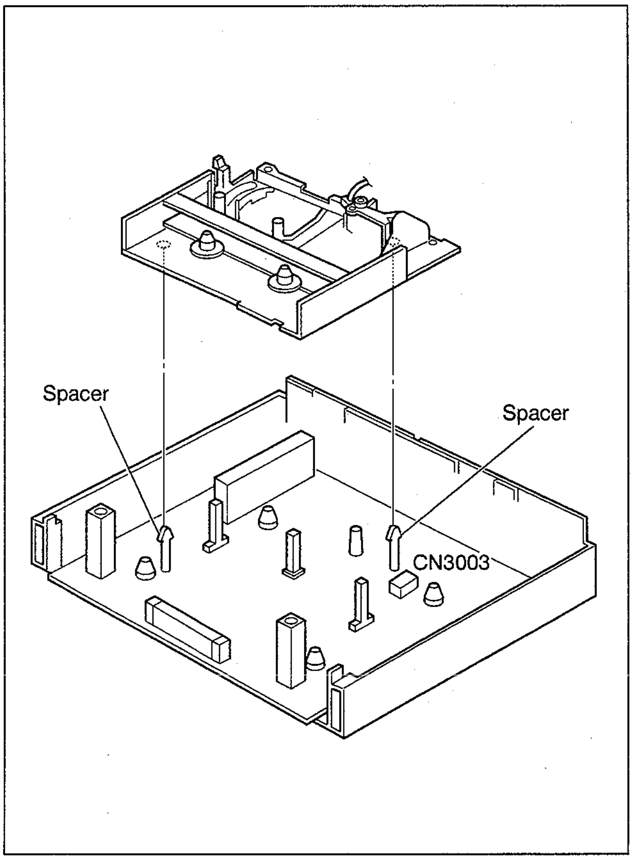


Fig. 2-2-18

(3) Making sure that the connector CN3003 of the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note: ***When the capstan motor has been replaced with a new one, perform recording in the EP mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole Base Assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).

(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.

(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the "Procedures for Lowering the Cassette holder assembly" of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

NOTE: *After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.*

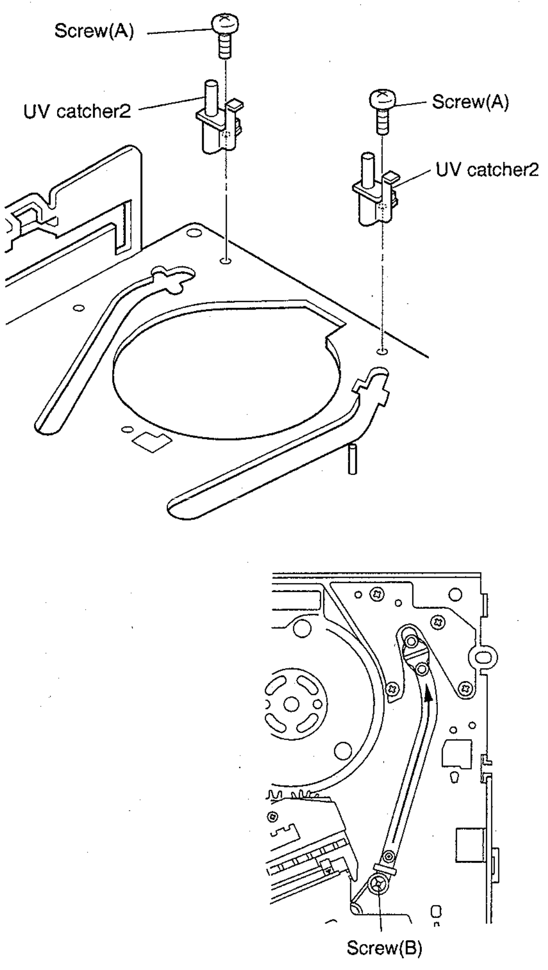

Screw(A)
UV catcher2
Screw(A)
UV catcher2
Screw(B)

Fig. 2-2-19

2.2.10 Rotary Encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-20.)

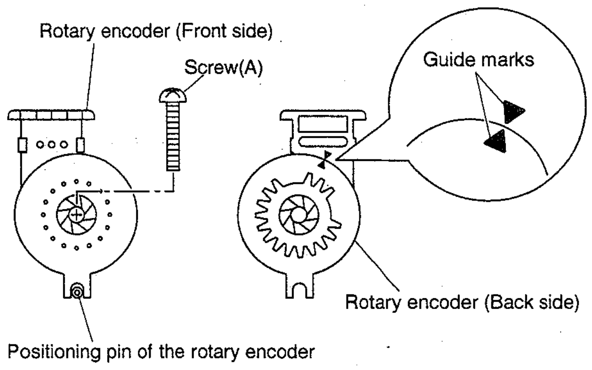

Rotary encoder (Front side)
Screw(A)
Guide marks
Rotary encoder (Back side)
Positioning pin of the rotary encoder

Fig. 2-2-20

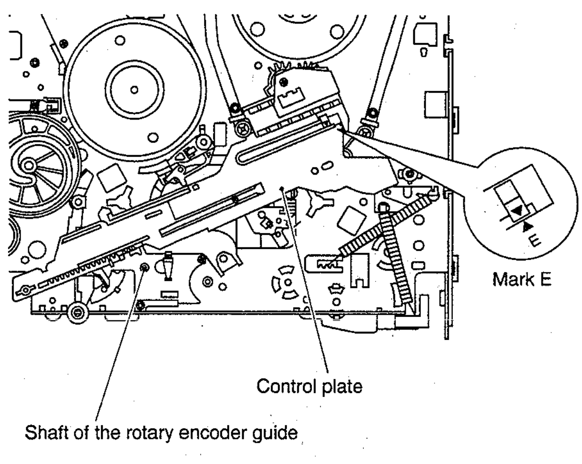

E
Mark E
Control plate
Shaft of the rotary encoder guide

Fig. 2-2-21

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-20. (See Fig. 2-2-20 and Fig. 2-2-21.)

(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.

(3) Tighten the screw (A) to complete the installation.

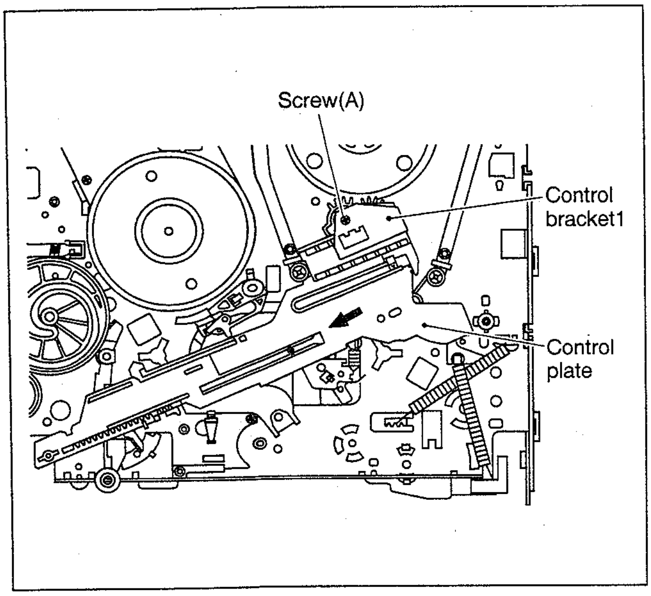

Screw(A)
Control bracket1
Control plate

Fig. 2-2-29

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-30 (to the left of center of the R section).

(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base asmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-31.)

(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-31.)

(5) Pull off the hexagonal wrench for positioning.

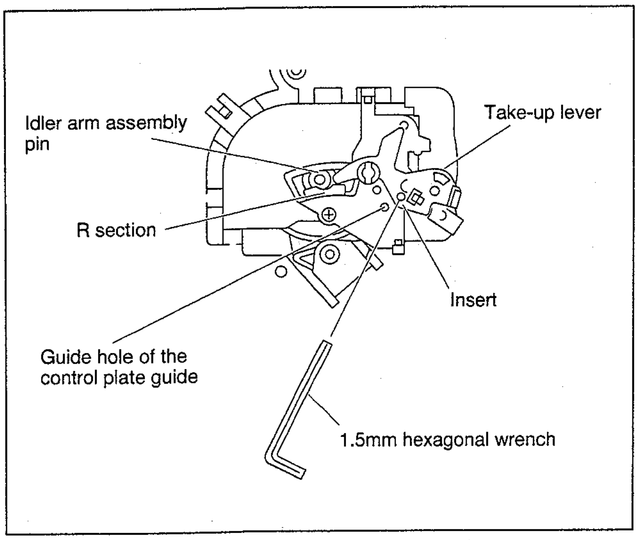

Idler arm assembly pin
Take-up lever
R section
Insert
Guide hole of the control plate guide
1.5mm hexagonal wrench

Fig. 2-2-30

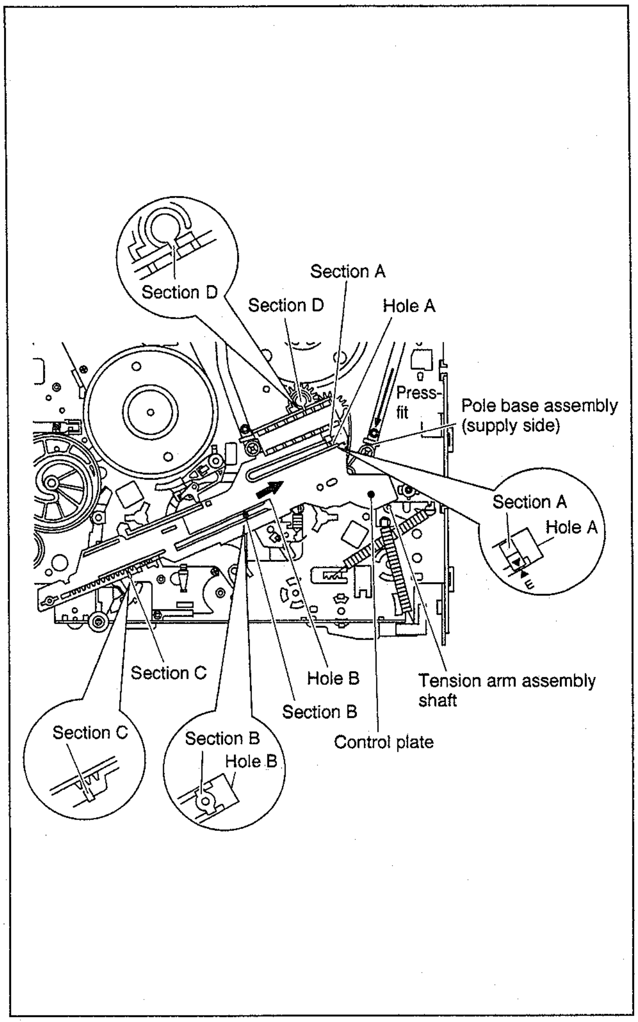

Section D
Section A
Section D
Hole A
Press-fit
Pole base assembly (supply side)
Section A
Hole A
E
Section C
Hole B
Tension arm assembly shaft
Section B
Control plate
Section C
Section B
Hole B

Fig. 2-2-31

2.2.16 Loading Arm Gear (supply or take-up side) and Loading Arm Gear Shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-32.)

(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-32.)

(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-32 and Fig. 2-2-33.)

(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

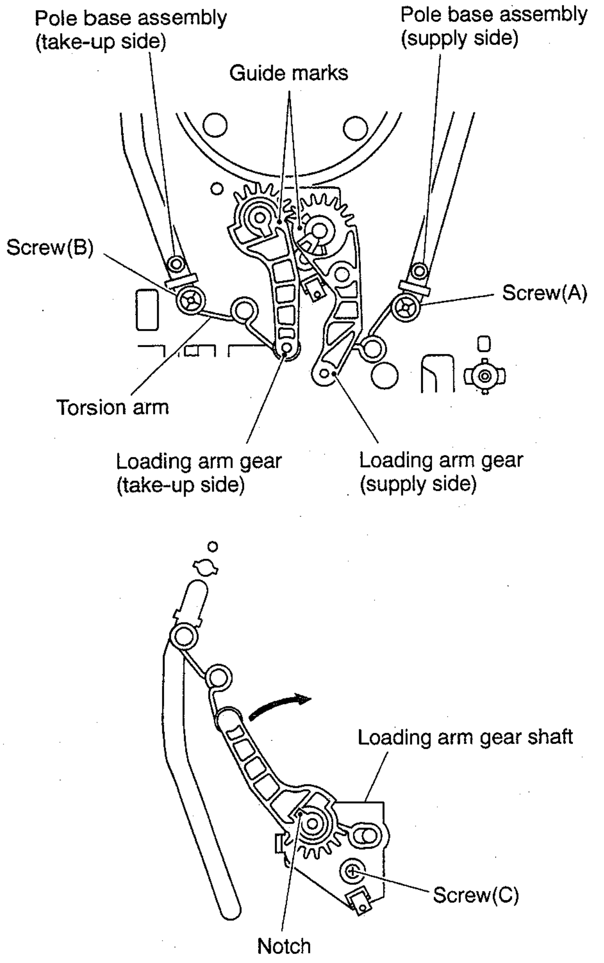

Pole base assembly (take-up side)
Pole base assembly (supply side)
Guide marks
Screw(B)
Screw(A)
Torsion arm
Loading arm gear (take-up side)
Loading arm gear (supply side)
Loading arm gear shaft
Screw(C)
Notch

Fig. 2-2-32

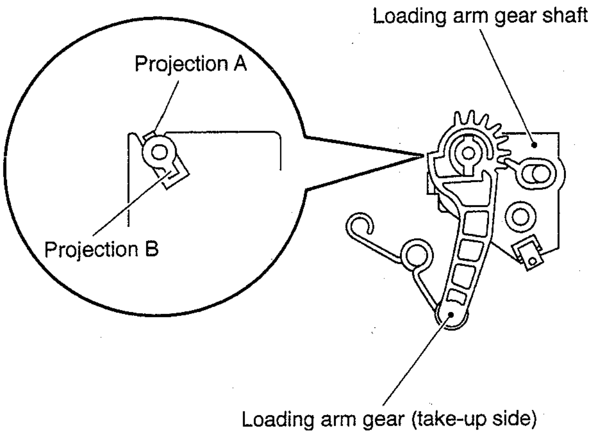

Loading arm gear shaft
Projection A
Projection B
Loading arm gear (take-up side)

Fig. 2-2-33

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-33.)

(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).

(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-32.)

2.2.17 Take-up Lever, Take-up Head and Control Plate Guide

(1) Remove the spring of the take-up lever from the main deck.

(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.

(3) Remove the screw (A).

(4) Align the idler arm assembly pin in the center of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

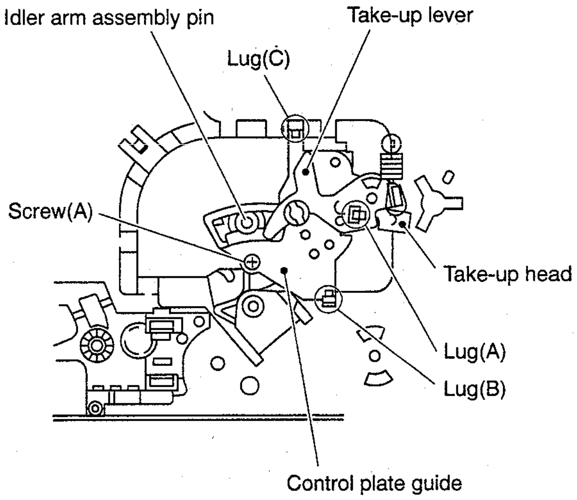

Idler arm assembly pin
Take-up lever
Lug(C)
Screw(A)
Take-up head
Lug(A)
Lug(B)
Control plate guide

Fig. 2-2-34

2.2.18 Capstan Brake Assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-35.)

(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

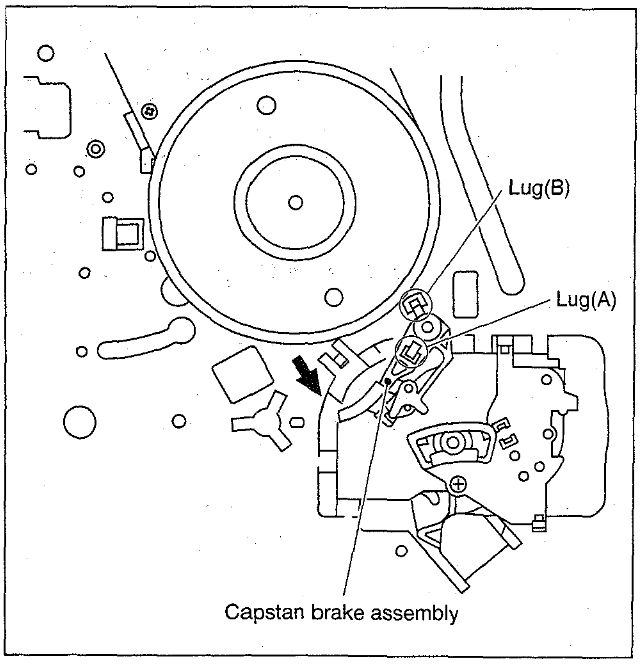

Lug(B)
Lug(A)
Capstan brake assembly

Fig. 2-2-35

2.2.19 Sub Brake Assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).

(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.

(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

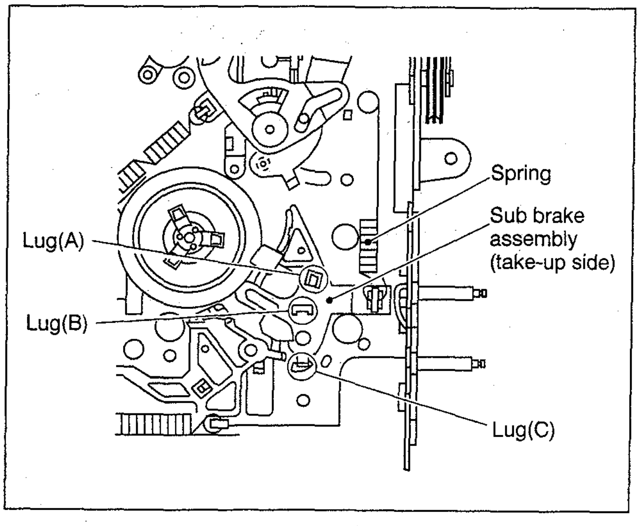

Spring
Sub brake assembly (take-up side)
Lug(A)
Lug(B)
Lug(C)

Fig. 2-2-36

2.2.20 Main Brake Assembly (take-up side), Reel Disk (take-up side) and Main Brake Assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).

(2) Remove the spring attached to the main brake assembly.

(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.

(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-37.)

Note: *If the main brake assembly is difficult to remove, press it and hold the adjustment pin from the back side of the main deck when attempting to remove it.*
After the adjustment pin has been removed or the main brake assembly or the reel disk on the supply or take-up side have been replaced, it is required to adjust the main brake assembly torque. See page 2-23 for the detailed adjustment procedures.

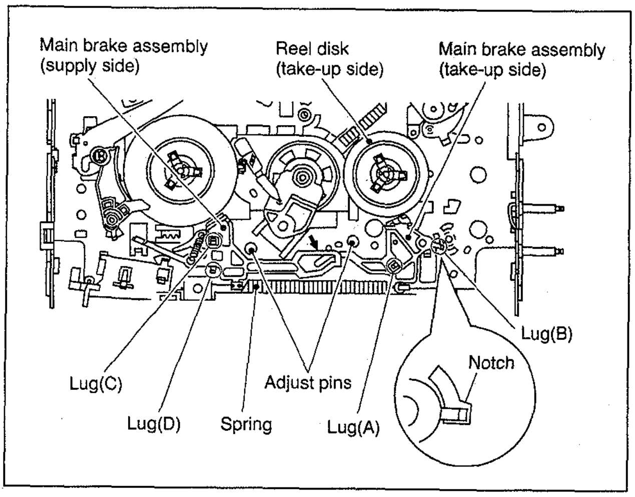

Main brake assembly (supply side)
Reel disk (take-up side)
Main brake assembly (take-up side)
Lug(B)
Notch
Lug(C)
Adjust pins
Lug(D)
Spring
Lug(A)

Fig. 2-2-37

(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-38.)

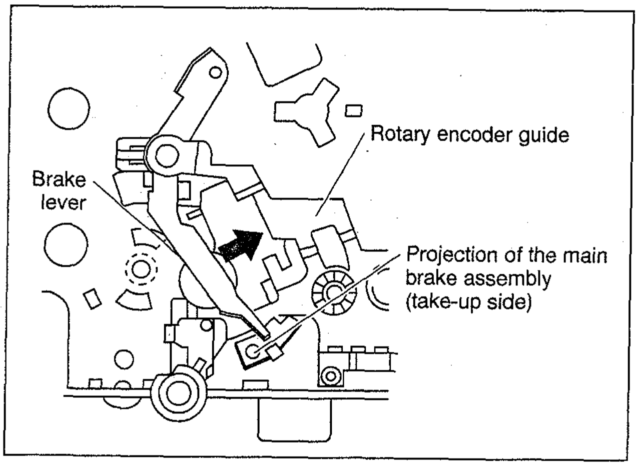

Rotary encoder guide
Brake lever
Projection of the main brake assembly (take-up side)

Fig. 2-2-38

2.2.21 Tension Brake Assembly, Reel Disk (supply side) and Tension Arm Assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.

(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).

(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-39.)

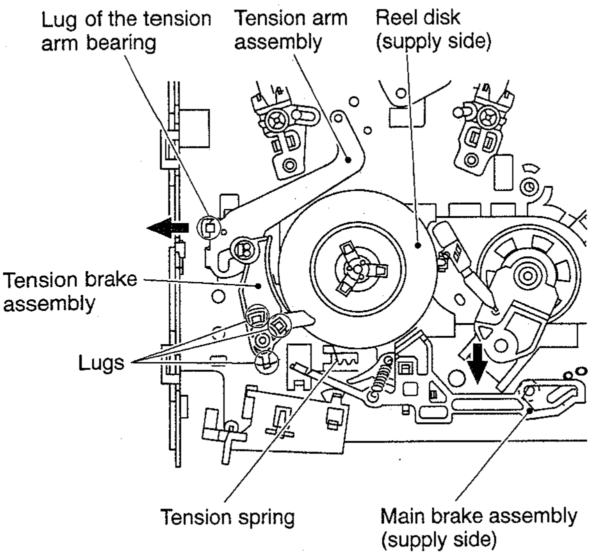

Lug of the tension arm bearing
Tension arm assembly
Reel disk (supply side)
Tension brake assembly
Lugs
Tension spring
Main brake assembly (supply side)

Fig. 2-2-39

2.2.22 Idler Lever, Idler Arm Assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.

(2) Remove the slit washer and pull out the idler arm assembly.

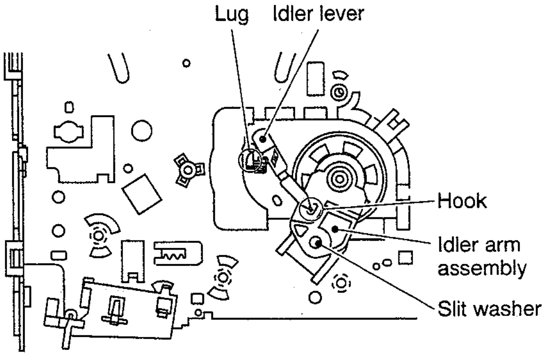

Lug
Idler lever
Hook
Idler arm assembly
Slit washer

Fig. 2-2-40

2.2.23 Stator Assembly

(1) Remove the flat cable.

(2) Remove the two screws (A).

(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)

(4) After installation, be sure to perform the PB switching point adjustment according to the electrical adjustment procedure.

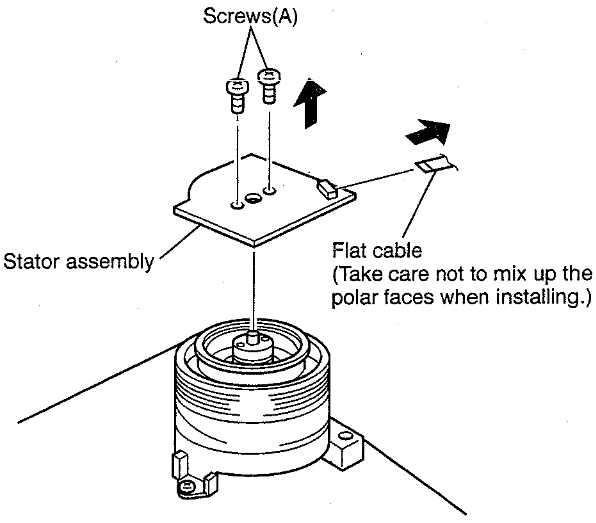

Screws(A)
Stator assembly
Flat cable
(Take care not to mix up the polar faces when installing.)

Fig. 2-2-41

2.2.24 Rotor Assembly

(1) Remove the stator assembly.
(2) Remove the two screws (B) and remove the rotor assembly.

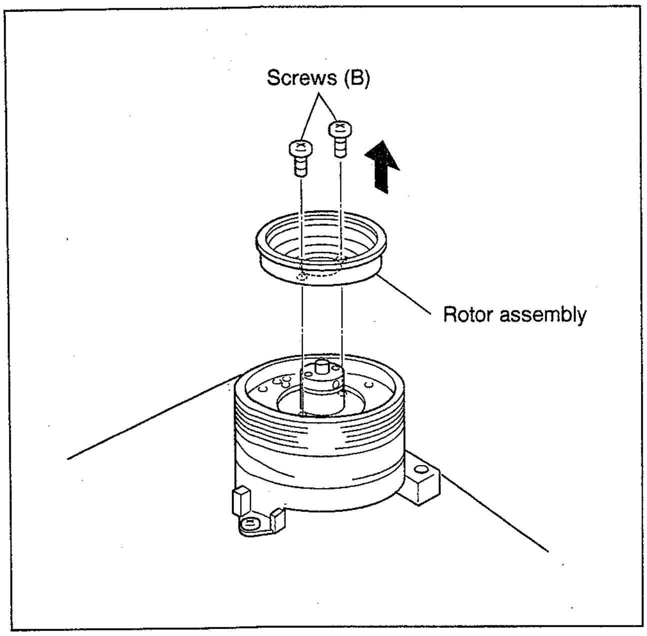

Screws (B)
Rotor assembly

Fig. 2-2-42

Note: *When installing the rotor assembly, note that a normal picture cannot be obtained without ensuring the phase matching as mentioned below.*

(3) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-43.
(4) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-43.)

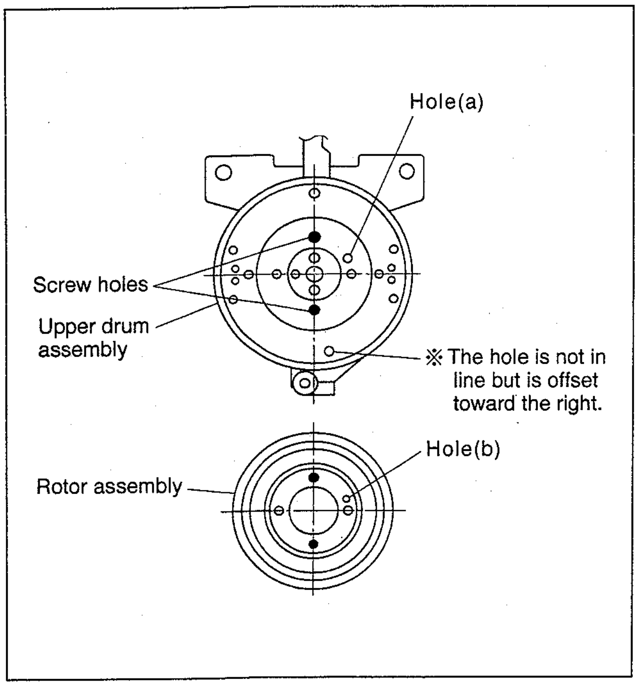

Hole(a)
Screw holes
Upper drum assembly
※The hole is not in line but is offset toward the right.
Hole(b)
Rotor assembly

Fig. 2-2-43

2.2.25 Upper Drum Assembly

1. How to remove

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

Note: *When replacement is required, control the up-down movement of the brush. Never apply grease.*

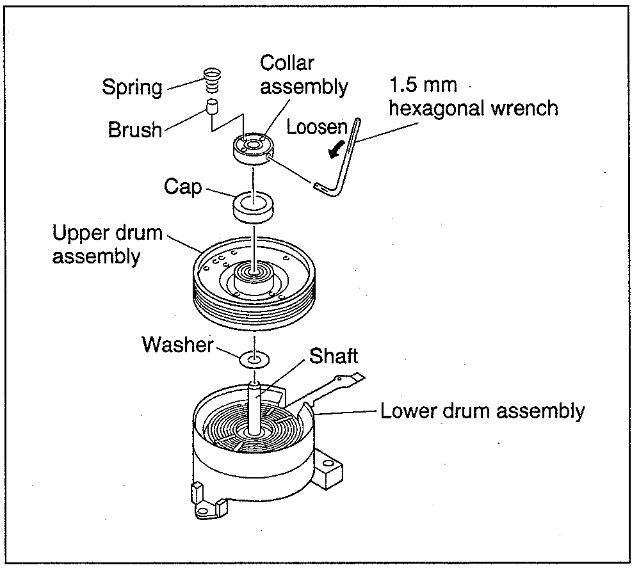

Spring
Collar assembly
1.5 mm hexagonal wrench
Brush
Loosen
Cap
Upper drum assembly
Washer
Shaft
Lower drum assembly

Fig. 2-2-44

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-45.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-44.)

Note: *When replacing the upper drum assembly, replace it the together with the washer.*

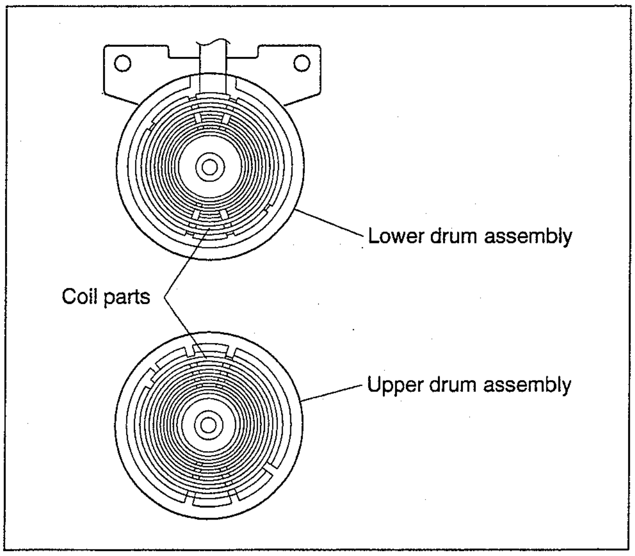

Lower drum assembly
Coil parts
Upper drum assembly

Fig. 2-2-45

(3) Install the cap to the upper drum assembly.

(4) Position the collar assembly as indicated in Fig.2-2-46 while controlling its up- down movement.

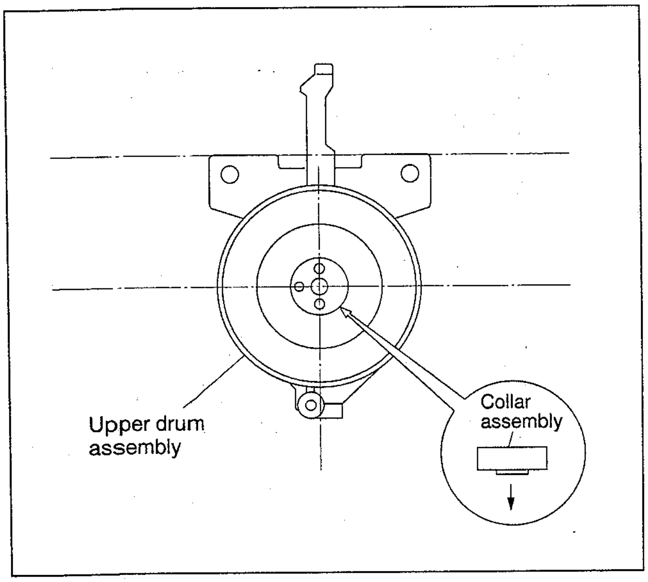


Fig. 2-2-46

(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.

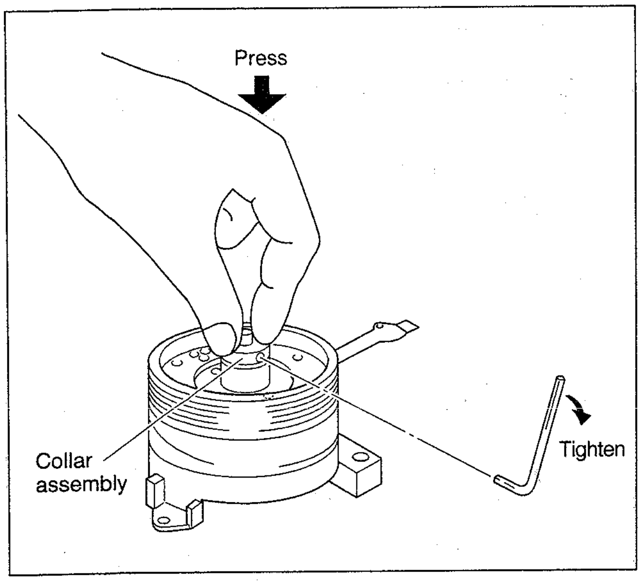


Fig. 2-2-47

(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.

(7) Install the rotor assembly and stator assembly according to Fig 2-2-41 and 2-2-42.

(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.

- PB switching point adjustment
- Slow tracking adjustment
- Compatibility adjustment (Be sure to check for compatibility for the EP mode.)

2.3 COMPATIBILITY ADJUSTMENT

Notes: • *Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the audio control head, drum assembly or any part of the tape transport system.*

- *To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.*

2.3.1 Checking/Adjustment of FM Waveform Linearity

(1) Connect the oscilloscope to TP106(V.PB FM) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.

(2) Playing the alignment tape MHP, observe the FM waveform.

(3) Press the channel buttons (+, –) simultaneously during playback to enter the manual tracking mode. (This also brings tracking to the center.)

(4) Make sure that there is no significant level drop of the FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig.2-3-1.)

(5) Reduce the FM waveform while pressing the channel buttons (+, –) during playback. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver (PTU94002) to make the FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the guide roller to make it linear. (See Fig.2-3-3.)

(6) Then play MHP-L and make sure that the FM waveform varies in parallel and linearly with the tracking operation. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).

(7) Unload the cassette tape once, play the alignment tape MHP-L again and confirm the FM waveform.

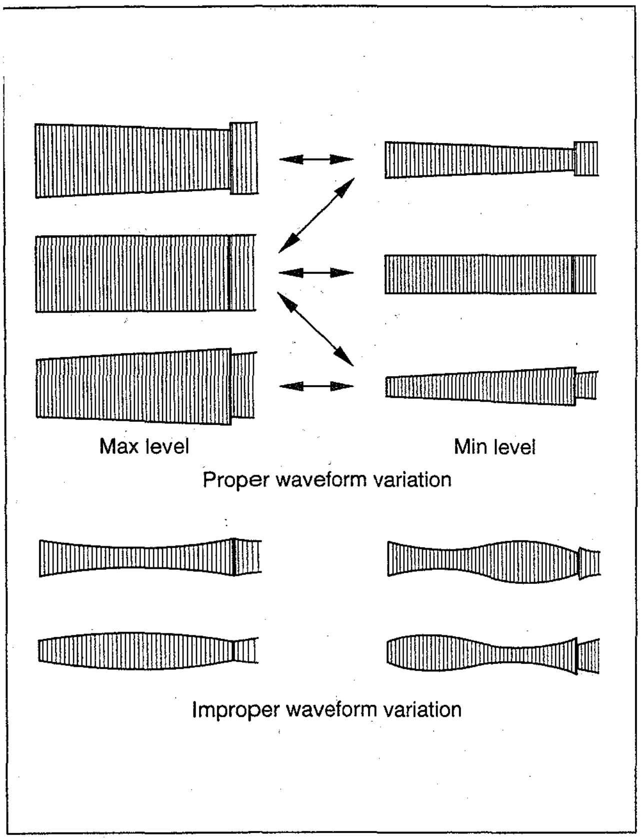

Max level
Min level
Proper waveform variation
Improper waveform variation

Fig. 2-3-1

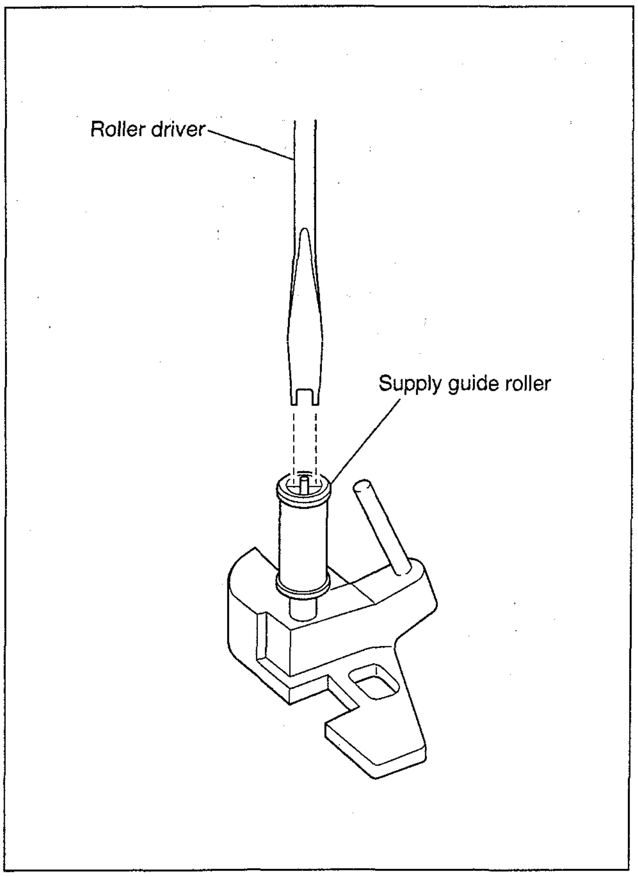

Roller driver
Supply guide roller

Fig. 2-3-2

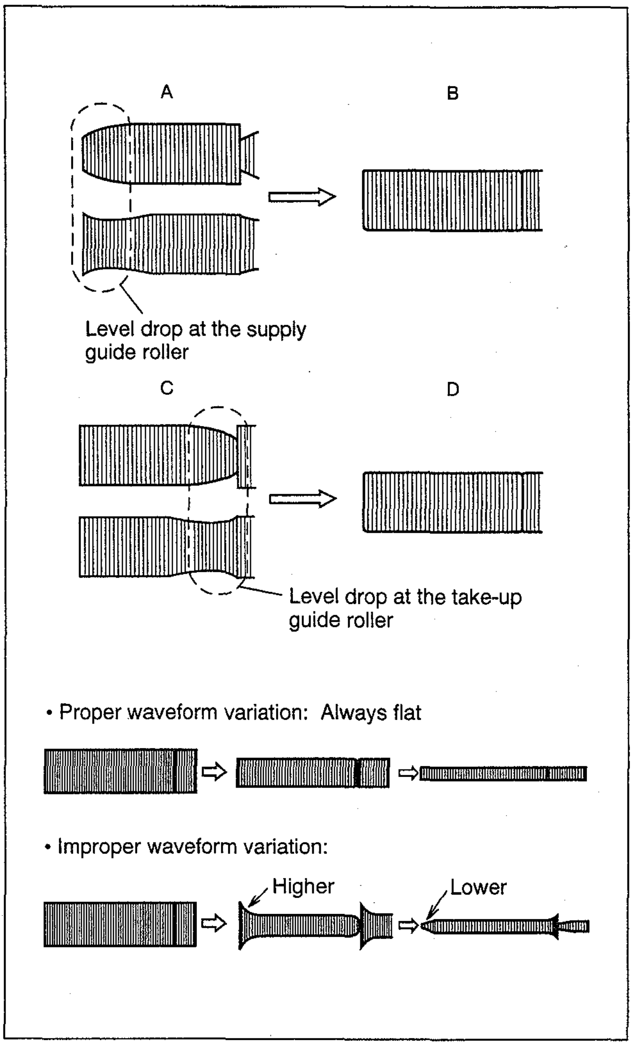

A
B
Level drop at the supply guide roller
C
D
Level drop at the take-up guide roller
• Proper waveform variation: Always flat
• Improper waveform variation:
Higher
Lower

Fig. 2-3-3

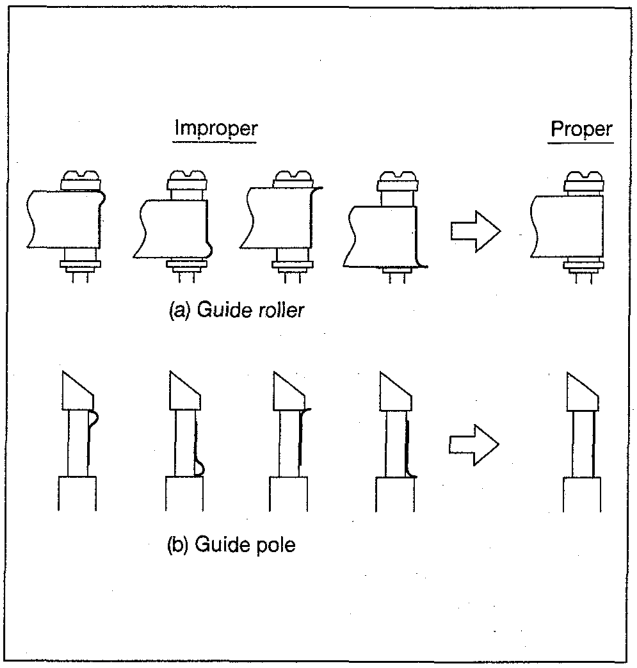

Improper
Proper
(a) Guide roller
(b) Guide pole

Fig. 2-3-4

2.3.2 Checking/Adjustment of the Height and Tilt of the Audio Control Head

Note: *Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-15.)*

(1) Connect CH-1 of the oscilloscope to AUDIO OUT and CH-2 to TP4001 (CTL P) of the main board assembly and observe the waveforms on both channels in the ALT mode.
(2) Play the alignment tape MHP and adjust it by turning the screws (1), (2) and (3) little by little until the waveform of both the audio output signal and the control pulse reach maximum. The screw (1) and screw (3) are for adjustment of tilt and screw (2) for azimuth.

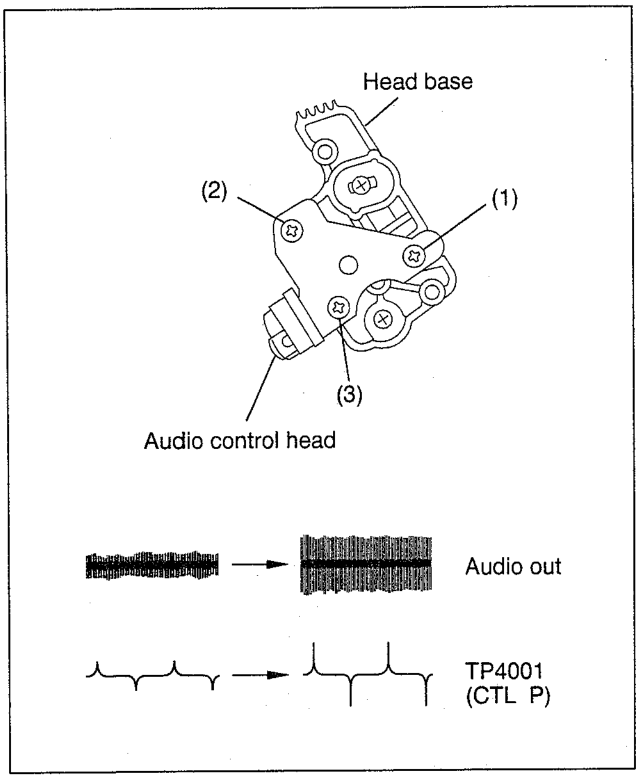


Fig. 2-3-5

2.3.3 Checking/Adjustment of the Audio Control Head Phase (X-Value)

(1) Connect the oscilloscope to TP106(V.PB FM) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
(2) Play the alignment tape MHP and observe the FM waveforms.
(3) Press the channel buttons (+, –) simultaneously during playback to enter the manual tracking mode. (This also brings tracking to the center.)
(4) Loosen screws (4) and (5) so that the A/C head position bit (PTU94010) is set as indicated in Fig.2-3-6.
(5) Turn the A/C head position bit fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the FM waveform output level. Then tighten the screw (4) temporarily.
(6) Then play the alignment tape MHP-L.
(7) Press the channel buttons (+, –) simultaneously during playback to enter the manual tracking mode. (This also brings the tracking to the center.)
(8) Perform the tracking operation and make sure that the FM waveform is at its maximum.
(9) If it is not at maximum, loosen the temporarily tightened the screw (4) and turn the A/C head position bit to bring the audio control head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

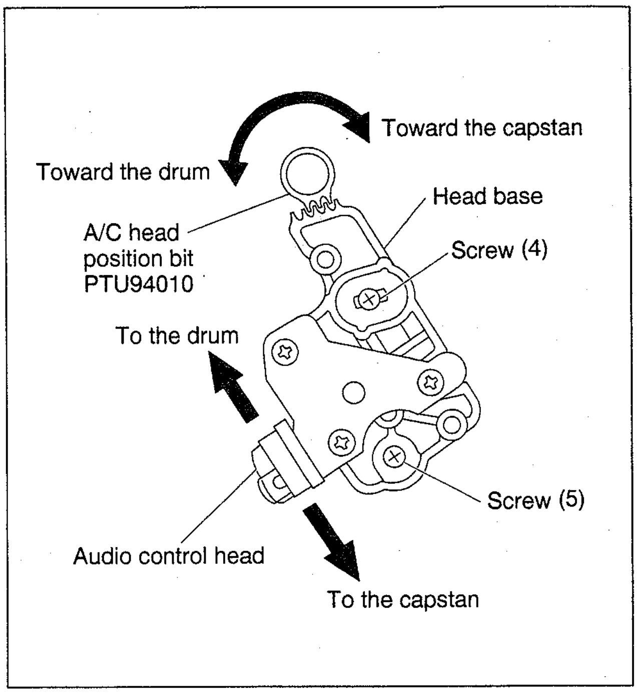


Fig. 2-3-6

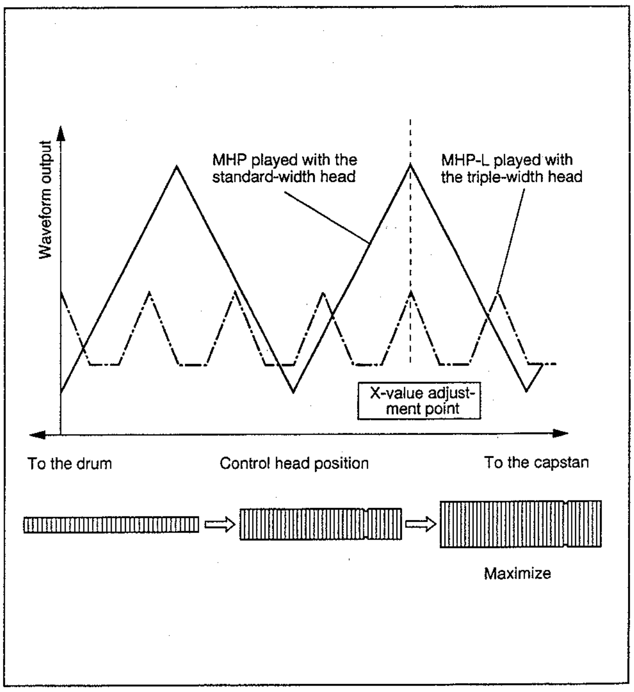


Fig. 2-3-7

2.3.4 Checking/Adjustment of the Standard Tracking Preset

Note: *Set the remote control code of the video recorder to A mode.*
(The unit set in B mode does not accept the remote control code of the presetting unit.)

(1) Connect the oscilloscope to TP106(V. PB FM) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
(2) Playing the alignment tape MHP-L and observing the FM waveform, make sure that the auto tracking operation is complete.
(3) Press the button "D" of the presetting unit twice.
(4) Make sure that the MHP-L is not ejected.
(5) If ejected, again perform the phase (X-value) adjustment of the audio control head.

2.3.5 Checking/Adjustment of the Tension Pole

(1) Check the back tension cassette gauge (PUJ48076-2) to make sure that the indicator points to 25 - 51 gf•cm.
(2) If the indicated value is outside this range, carry out the following adjustment steps.
  1) Select the mechanism servicing mode. (See 1.5 MECHANISM SERVICE MODE.)
  2) While in the Play mode, turn the adjustment pin with a straight-slot screwdriver while taking care not to touch the 2.5 mm dia. pole. (See Fig.2-3-8.)

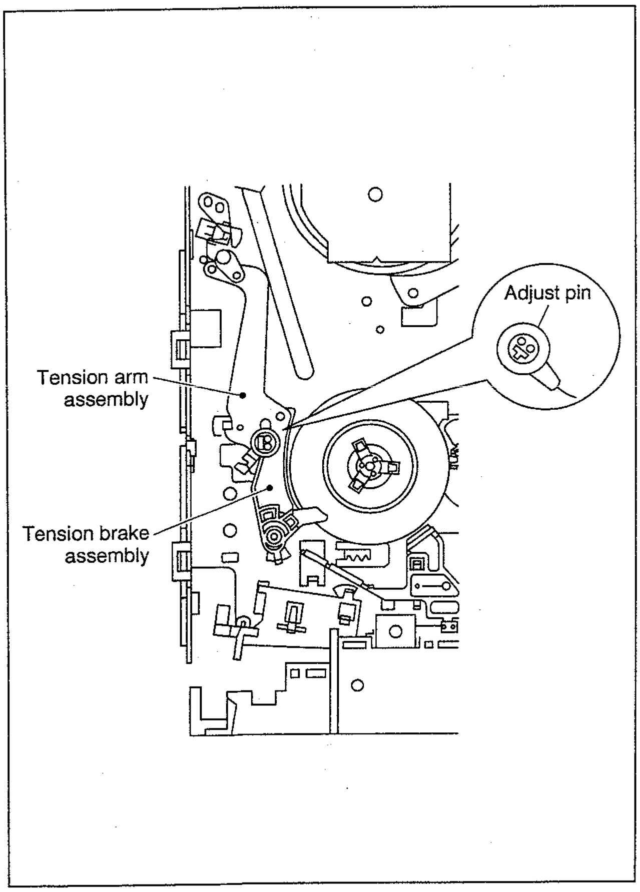


Fig. 2-3-8

2.3.6 Adjustment of the Tension Stud

(1) Adjust so that the left side of the tension stud is on the extension of the notch line of the main deck. (See Fig. 2-3-9.)

Note: *Adjustment is not usually necessary for the tension stud. Perform this adjustment only when it is out of position.*

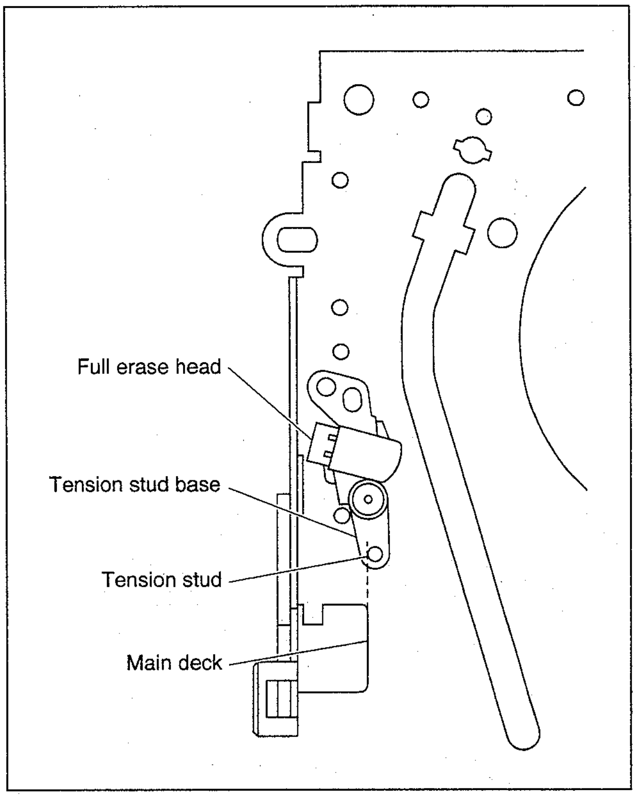


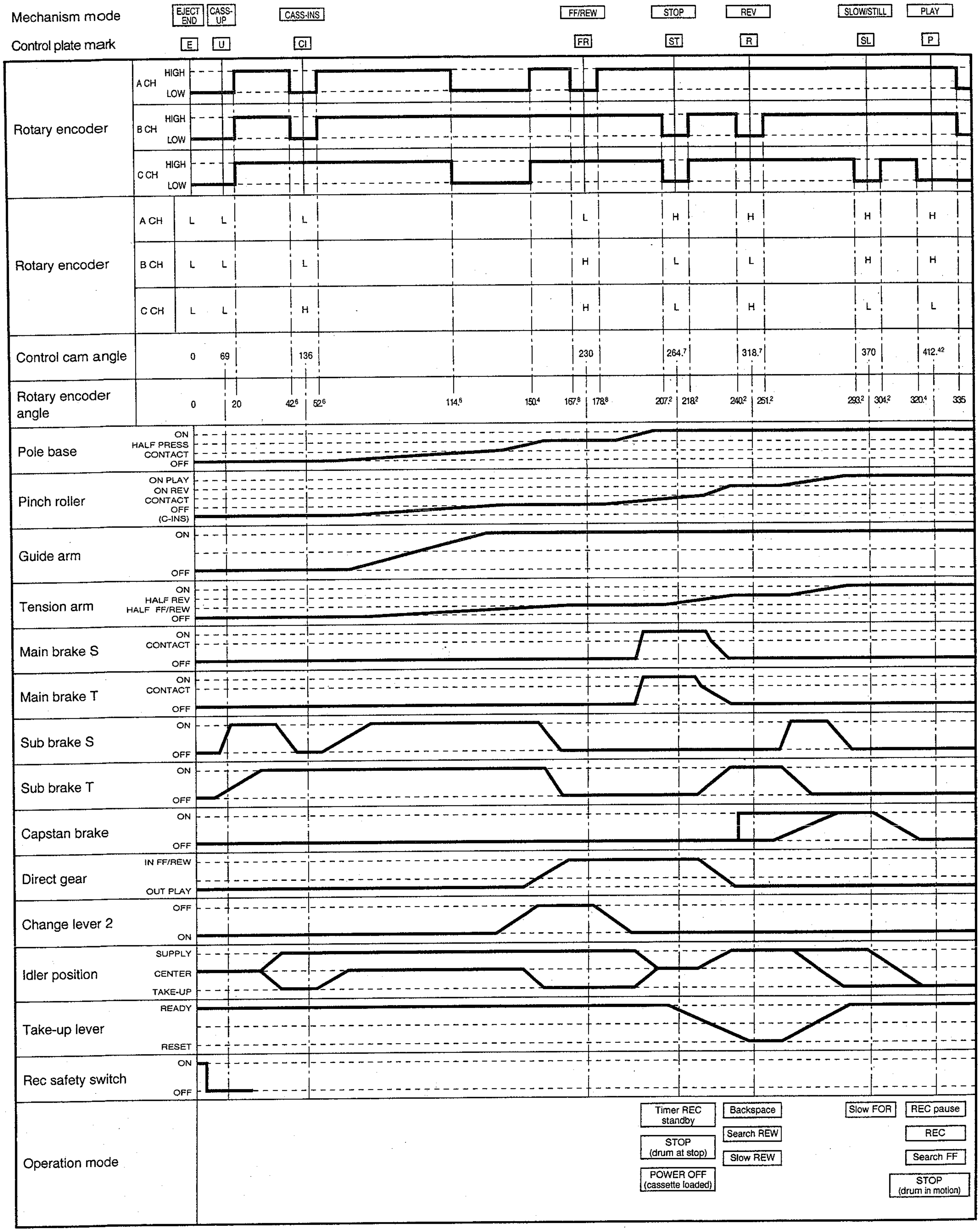
Fig. 2-3-9

2.3.7 Main Brake Torque Adjustment

Note: *Adjustment of the main brake torque is required after the adjustment pin has been removed or the main brake assembly or the reel disk on the supply or take-up side have been replaced, removed or attached.*

(1) Rotate the pulley of the loading motor by hand to align the mark ▼ on the loading arm gear shaft with the ST marking on the control plate (i.e. set to the STOP mode position).
(2) Insert a torque gauge (PUJ48075-2) into the reel disk on the side to be played, hold the torque gauge lightly, rotate it clockwise when measuring the supply side torque or counterclockwise when measuring the take-up side torque, and read the value indicated at the moment the reel disk starts to slip.
(3) Make sure that the main brake torque values on the supply and take-up sides are both between $23.^5$ — $78.^4$ x 10^{-3} N•m (240 — 800 gf•cm). If the value is outside the specified range, adjust to the specified value by rotating the adjustment pin.
If an adjustment by using the adjustment pin is not possible, replace the main brake assembly.

Mechanism Timing Chart


Mechanism mode
EJECT END
CASS-UP
CASS-INS
FF/REW
STOP
REV
SLOW/STILL
PLAY
Control plate mark
E
U
CI
FR
ST
R
SL
P
Rotary encoder
A CH
B CH
C CH
HIGH
LOW
L
H
Control cam angle
0
69
136
230
264.7
318.7
370
412.42
Rotary encoder angle
0
20
42.6
52.6
114.5
150.4
167.8
178.8
207.2
218.2
240.2
251.2
293.2
304.2
320.4
335
Pole base
ON
HALF PRESS
CONTACT
OFF
Pinch roller
ON PLAY
ON REV
CONTACT
OFF
(C-INS)
Guide arm
ON
OFF
Tension arm
ON
HALF REV
HALF FF/REW
OFF
Main brake S
ON
CONTACT
OFF
Main brake T
ON
CONTACT
OFF
Sub brake S
ON
OFF
Sub brake T
ON
OFF
Capstan brake
ON
OFF
Direct gear
IN FF/REW
OUT PLAY
Change lever 2
OFF
ON
Idler position
SUPPLY
CENTER
TAKE-UP
Take-up lever
READY
RESET
Rec safety switch
ON
OFF
Operation mode
Timer REC standby
STOP (drum at stop)
POWER OFF (cassette loaded)
Backspace
Search REW
Slow REW
Slow FOR
REC pause
REC
Search FF
STOP (drum in motion)

SECTION 3
ELECTRICAL ADJUSTMENT

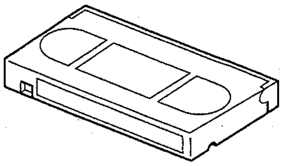
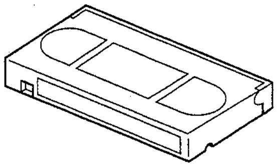
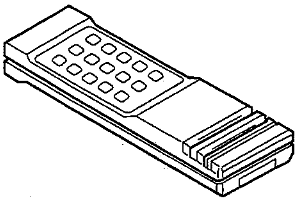
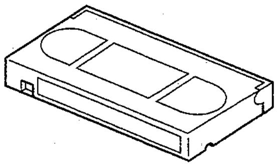
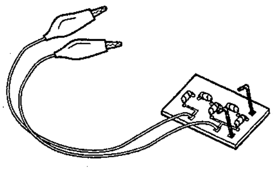
3.1 PRECAUTION

Electrical adjustment are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also do not attempt these adjustments unless the proper equipments is available.

3.1.1 Required test equipment

① Color television or monitor
② Oscilloscope: wide-band,dual-trace,triggered delayed sweep
③ Frequency counter
④ Audio level meter
⑤ Signal generator: RF/IF sweep/marker
⑥ Signal generator: NTSC color bar, stairstep
⑦ Recording tape (VHS/SVHS)
⑧ Digit-key remote controller(provided)

3.1.2 Required adjustment tools

Alignment tape (SP, stairstep) MHP	Alignment tape (EP, stairstep) MHP-L
	
Presetting unit PTU94008	Alignment tape (S-VHS, SP/EP, color bar) MH-1H
	
LPF PTU93006	
	

3.1.3 Color bar signal, color bar pattern

- Color bar signal

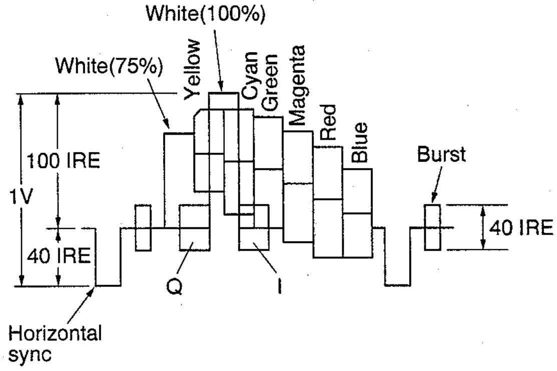

White(100%)
White(75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
100 IRE
1V
40 IRE
40 IRE
Q
I
Horizontal sync

Fig.3-1-1 Color bar signal waveform

- Color bar pattern

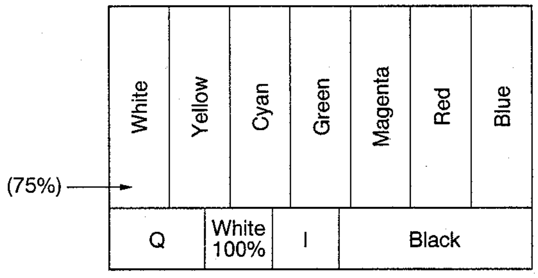

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
Q
White 100%
I
Black

Fig.3-1-2 Color bar pattern

Note:

The system control circuit of this model has an automatic recognition about the ON-OFF control of the ***DOCTOR SYSTEM.***

3.2 SERVO CIRCUIT

Notes: • ***Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.***
• ***Set the VCR to the mode A by the remote controller.***

3.2.1 PB switching point

Signal	• Alignment tape [MHP], Stairstep
Mode	• PB • Automatic tracking OFF • TBC: OFF
Equipment	• Oscilloscope
Measurement point	• VIDEO OUT TERMINAL
Trigger slope (-)	• TP111(D.FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• 7.0 ± 0.5H

Note: • ***Use only the "E" and "F" buttons, depressing other buttons during adjustment may cause adjustment errors.***

(1) Playback the stairstep signal of the alignment tape.
(2) Connect an oscilloscope to VIDEO OUT TERMINAL and TP111 (negative slope), and then observe VIDEO OUT TERMINAL.
(3) Adjust by pressing the "E" or "F" buttons of the presetting unit so that the switching point becomes 7.0 ± 0.5H from V.sync. (See Fig. 3-2-2.)
(4) Depress the STOP button.

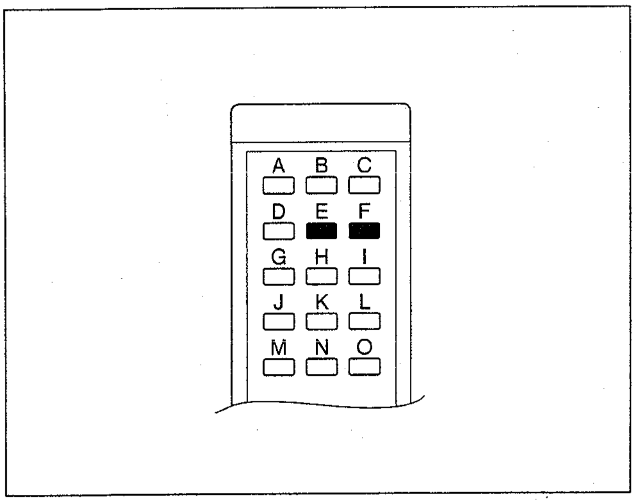


Fig. 3-2-1 Presetting unit

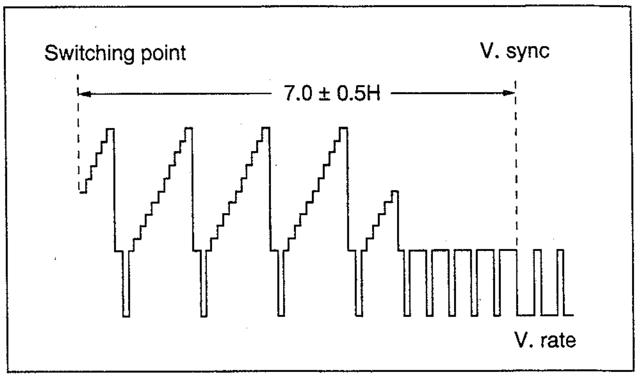


Fig. 3-2-2 PB switching point

3.2.2 Slow tracking preset

Signal	• Tuner or color bar
Mode	• SP/EP : REC → PB(SLOW) • S-VHS • Automatic tracking OFF
Equipment	• TV-Monitor
Adjustment tool	• Presetting unit [PTU94008]
Specification	• Minimum noise

Note: • ***Use only the "B" and "C" buttons, depressing other buttons during adjustment may cause adjustment errors.***

(1) Record a color bar signal in the SP mode.
(2) Playback the recorded signal on the FWD slow mode.
(3) Set the tracking control to the center position by simultaneously pressing the CH "▲" and "▼" buttons.
(4) Observe the display on the TV monitor and adjust for optimum noise condition (best tracking) by depressing the "B " or "C" buttons of the presetting unit.
(5) Depress the STOP button.
(6) Confirm that the bar noise is not visible on the TV monitor in the slow mode.
(7) Repeat steps (2) to (6) in the REV slow mode.
(8) Repeat steps (1) to (7) in the EP mode.

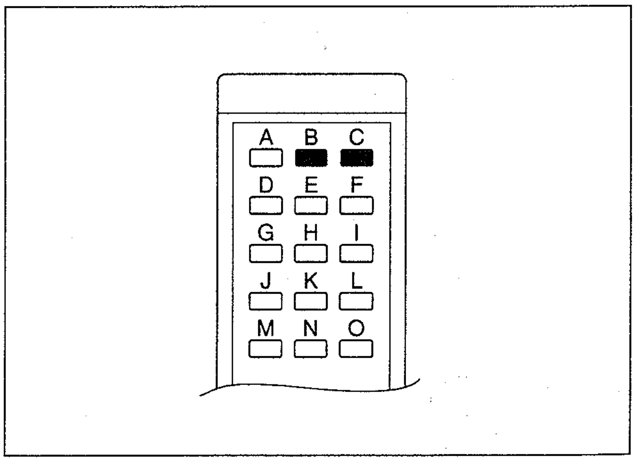


Fig. 3-2-3 Presetting unit

3.2.3 Dynamic drum preset

Signal	• Alignment tape [MHP-L], Stairstep
Mode	• Automatic tracking OFF
Equipment	• Oscilloscope
Measurement point	• TP106 (V.PB FM)
Trigger slope (–)	• TP111 (D.FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• FM waveform flat

Note: • ***Use only the "D", "E" and "M" buttons, depressing other buttons during adjustment may cause adjustment errors.***

(1) Connect an oscilloscope to TP106 and external trigger from TP111 (negative slope).
(2) Playback the EP stairstep portion of the alignment tape.
(3) Set the automatic tracking control to the OFF by simultaneously pressing the CH " ▲ " and " ▼ " buttons.
(4) Adjust for maximum level of playback FM waveform by depressing the CH " ▲ " or " ▼ " buttons.
(5) Adjust by pressing the "M+D" or "M+E" buttons of the presetting unit for FM waveform is flat as shown in Fig. 3-2-5.
(6) Adjust for half level of playback FM waveform from maximum level by depressing the CH " ▲ " or " ▼ " buttons.
(7) Readjust by pressing the "M+D" or "M+E" buttons of the presetting unit for FM waveform is flat as shown in Fig. 3-2-5.
(8) Record the stairstep signal by the EP mode and play it back in the EP FWD slow mode.
(9) Repeat steps (4) and (5).

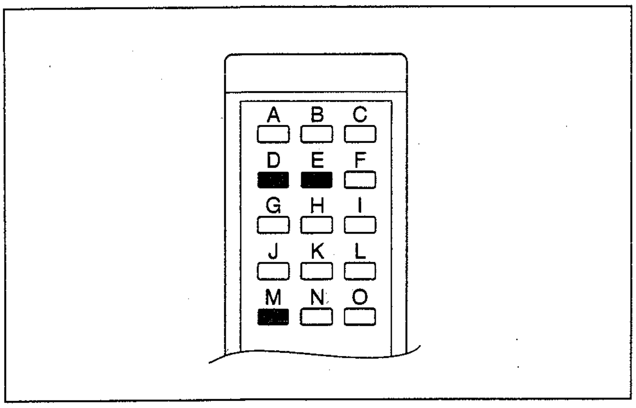


Fig. 3-2-4 Presetting unit

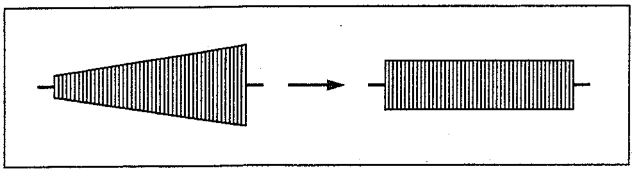


Fig. 3-2-5 PB FM

3.3 VIDEO CIRCUIT

Notes: • ***Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.***
- ***VIDEO circuit adjustments are performed by the EVR system by use of the presetting unit and digit-key remote controller.***
- ***S-INPUT means Y/C separated video signal in the chart.***
- ***Set the VCR to the mode A by the remote controller.***
- ***Unless otherwise specified, set the VCR to the following mode.***

PICTUER CONTROL	NORMAL
DIGITAL R3	ON
TBC	ON
AUTO TRACKING	OFF

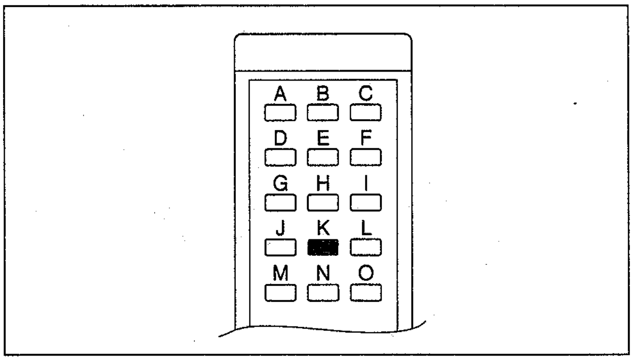


Fig. 3-3-1 Presetting unit

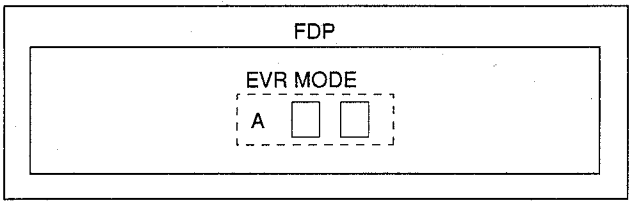


Fig. 3-3-2 EVR mode

3.3.1 EE Y level

Signal	• Color bar
Mode	• EE
Equipment	• Oscilloscope
Measurement point	• Y OUT TERMINAL(75 ohm TERMINATION)
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 11
Specification	• 1.00 ± 0.03 Vp-p (terminated)

(1) Connect an oscilloscope to Y OUT TERMINAL.
(2) Set the EVR mode by pressing the "K" button of the presetting unit.
(3) Set "A : 11" by twice pressing 1 button of the remote controller.
(4) Adjust the CH "▲" or "▼" buttons for 1.00 ± 0.03 Vp-p. (See Fig. 3-3-3.)
(5) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

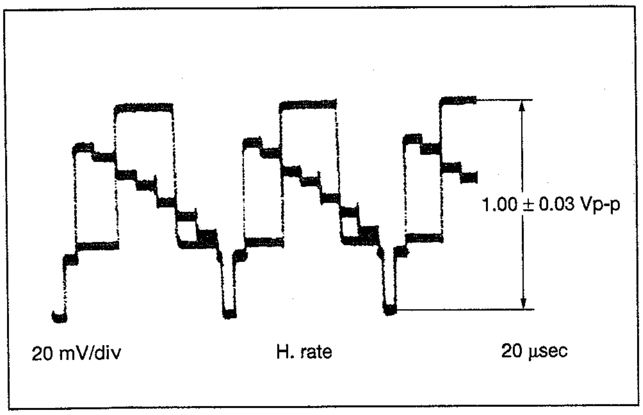


Fig. 3-3-3 EE Y level

3.3.2 SP/EP REC color level

Signal	• Alignment tape [MH-1H] • Color bar
Mode	• PB • REC → PB : SP/EP • S-VHS
Equipment	• Oscilloscope
Measurement point	• PB COLOR
Trigger slope (–)	• TP111 (D.FF)
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller • LPF fixture [PTU93006]
EVR mode	• A : 2
Specification	• "B" x 150 ± 5% : SP • "B" x 110 ± 5% : EP

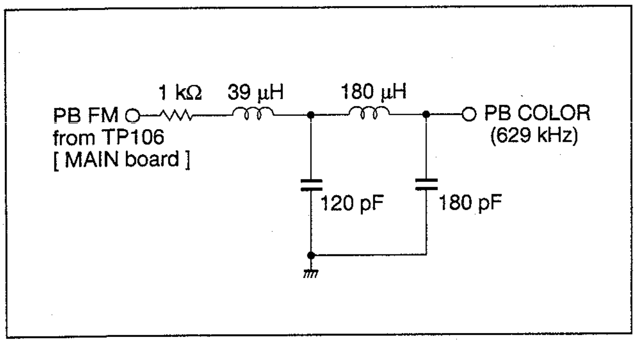


Fig. 3-3-4 LPF

(1) Connect an oscilloscope to PB COLOR of a LPF(refer to Fig. 3-3-4) and TP111(negative slope) on the MAIN board.
(2) Playback the SP color bar signal of the MH-1H alignment tape.
(3) Adjust by pressing the CH "▲" or "▼" buttons of the Front panel for maximum level of the color waveform and make a note of the higher color level "B".
(4) Press the STOP/EJECT button and eject the MH-1H alignment tape.
(5) Set the EVR mode by pressing the "K" button of the presetting unit.
(6) Set "A : 2" by pressing 2 button of the remote controller.
(7) Before recording, adjust the CH "▲" or "▼" buttons of the remote controller so that the higher level channel becomes 150 ± 5% : SP (110 ± 5% : EP) of the note "B" level during playback as shown in Fig. 3-3-5.
(8) Record a color bar signal in the SP (EP) mode, and playback recorded color bar signal.
(9) Set the normal VCR mode by pressing the "K" button again so adjustment data is memorized.

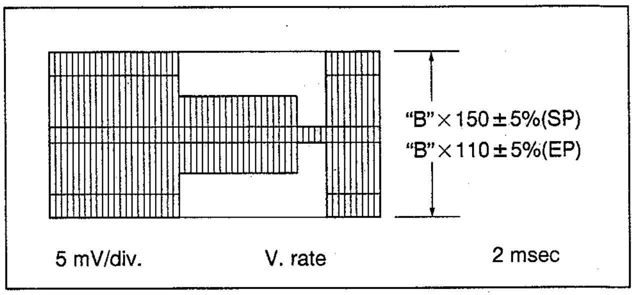


Fig. 3-3-5 REC color level

3.3.3 PB Y level (S-VHS/VHS)

Signal	• Color bar
Mode	• REC → PB : SP • S-VHS/VHS
Equipment	• Oscilloscope
Measurement point	• Y OUT TERMINAL(75 ohm TERMINATION)
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 11
Specification	• 1.00 ± 0.03 Vp-p (terminated)

(1) Connect an oscilloscope to Y OUT TERMINAL.
(2) Set the EVR mode by pressing the "K" button of the presetting unit.
(3) Set "A : 11" by twice pressing 1 button of the remote controller.
(4) Record a color bar signal in the S-VHS mode, and playback the recorded color bar signal.
(5) Adjust the CH "▲" or "▼" buttons for 1.00 ± 0.03 Vp-p as shown in Fig. 3-3-6.
(6) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.
(7) Repeat steps (1) to (6) in the VHS mode.

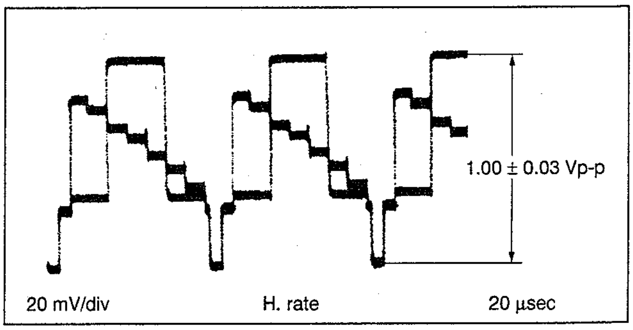


Fig. 3-3-6 PB Y level

3.3.4 S-VHS VIDEO EQ

Signal	• S INPUT • Video sweep
Mode	• REC → PB : SP/EP • S-VHS
Equipment	• Oscilloscope
Measurement point	• Y OUT TERMINAL(75 ohm TERMINATION)
Trigger slope (–)	• TP111 (D.FF)
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 3
Specification	• 3.2 ± 0.2 scale : SP • 2.8 ± 0.2 scale : EP

(1) Connect an oscilloscope to Y OUT TERMINAL and TP111 (negative slope).
(2) Record a video sweep signal in the S-VHS SP mode, and playback the recorded signal.
(3) Set the EVR mode by pressing the "K" button of the presetting unit.
(4) Set "A : 3" by pressing 3 button of the remote controller.
(5) When assuming the 100 kHz sweep signal marker on the bigger channel is four scales on the oscilloscope, adjust the CH "▲" or "▼" buttons on the front panel or the Digit-key remote controller so that the 3.58 MHz is set at 3.2 ± 0.2 scale (–2 ± 0.5 dB) while observing Y OUT of the S output. (See Fig. 3-3-7.)
(6) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.
(7) Carry out the step (3) and (4) in the S-VHS EP mode.
(8) When assuming the 100 kHz sweep signal marker on the bigger channel is four scales on the oscilloscope, adjust the CH "▲" or "▼" buttons on the front panel or the Digit-key remote controller so that the 3.58 MHz is set at 2.8 ± 0.2 scale (–3 ± 0.5 dB) while observing Y OUT of the S output. (See Fig. 3-3-7.)

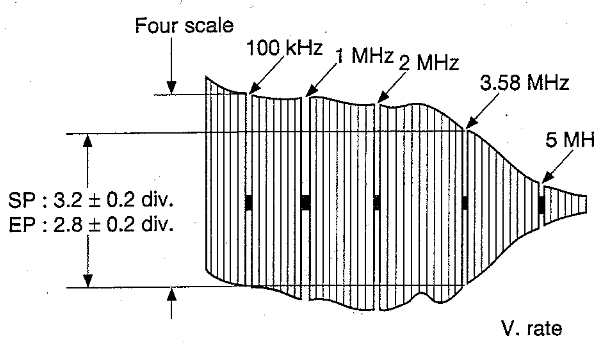


Fig. 3-3-7 S-VHS VIDEO EQ

3.3.5 D/A level

Signal	•Color bar
Mode	•EE •S-VHS
Equipment	•Oscilloscope
Measurement point	•CN1002-28pin (Y OUT) [3D SVHS board]
Adjustment part	•VR1401 (DA Y LEVEL) [3D SVHS board]
Specification (NOTE)	•2.05(REFERENCE VALUE) ± 0.03 Vp-p

(1) Connect the oscilloscope to CN1002-28.pin(Y OUT) on the 3D SVHS board.
(2) Confirm the Y level value during external S input.
(3) Switch the input signal to the external input, then adjust VR1401 on the 3D SVHS board so that the Y level value becomes the same level value which was confirmed at the step (2).

Note: • ***The adjusted value of 2.05 Vp-p is a reference value which should be obtained during external S input. The value should be adjusted to the one which was confirmed at step (2).***

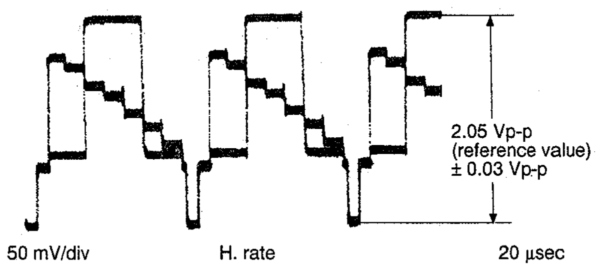


Fig. 3-3-8 D/A LEVEL

3.3.6 Auto picture

Signal	• Monoscope
Mode	• REC → PB : SP/EP • S-VHS
Adjustment tool	• Presetting unit [PTU94008]
Specification	• STOP mode

Note: • ***Use only the "L" button, depressing other buttons during adjustment may cause adjustment errors.***

(1) Record a monoscope signal in the SP mode.
(2) Playback the recorded signal.
(3) Press the "L" button of the presetting unit during playback.
(4) Confirm that the VCR will go into the STOP mode.
(5) Repeat steps (2) to (4) in the EP mode.

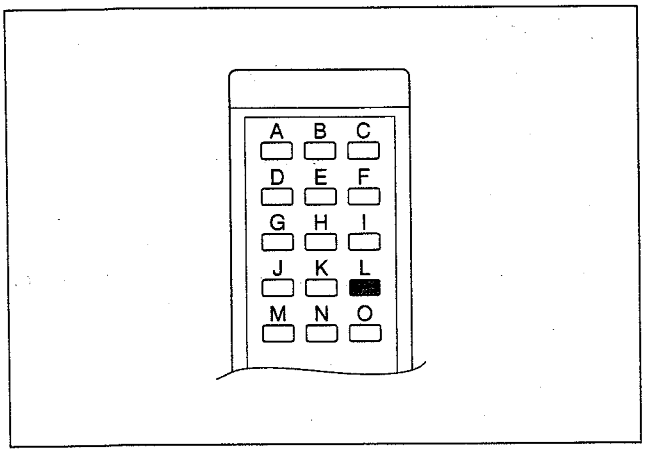


Fig. 3-3-9 Presetting unit

3.4 ON SCREEN CIRCUIT

Notes:
- ***Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.***
- ***Set the VCR to the mode A by the remote controller.***

3.4.1 Character position

Signal	• No signal
Mode	• EE
Equipment	• TV-monitor
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
Specification	• Character center

Note: • ***Use only the "H" button, depressing other buttons during adjustment may cause adjustment errors.***

(1) Press the MENU button and display the on screen character.
(2) Observe the TV-monitor and center position of character by pressing the "H" button of the presetting unit.

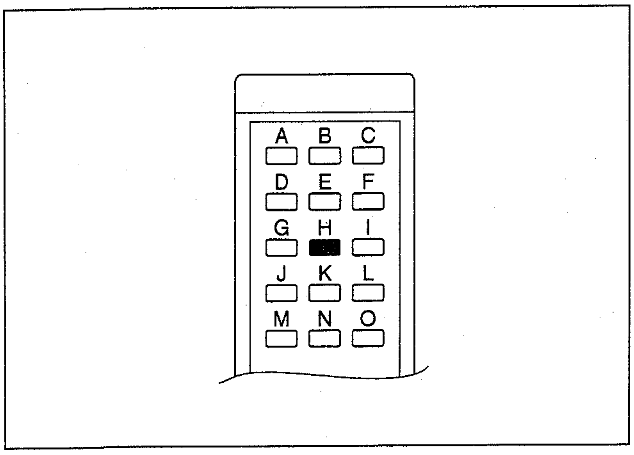


Fig. 3-4-1 Presetting unit

3.5 DEMODULATOR CIRCUIT

Notes:
- ***Unless otherwise specified,all measurement point and adjustment parts are located on the DEMODULATOR BOARD.***
- ***DEMODULATOR circuit adjustments are performed by the EVR system by use of the presetting unit and digit-key remote controller.***
- ***Unless otherwise specified,set an audio multiplex TV signal generator as follows;***
  RF signal : 70 dBu / 75 ,color bar 87.5% modulation.
- **Set the VCR to the mode A by the remote controller.**
- ***No signal: Connect (–)terminal of the capacitor C1505 to the GND(Ground).***

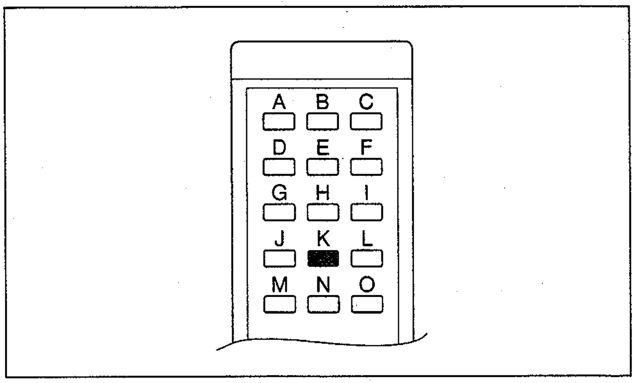


Fig. 3-5-1 Presetting unit

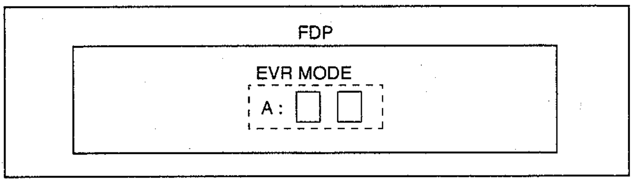


Fig. 3-5-2 EVR mode

3.5.1 Input level

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Audio level meter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 20
Specification	• 500 ± 10 mVrms

(1) Connect an audio level meter to IC1501- pin 26.
(2) Set the EVR mode by pressing the "K" button of the presetting unit more than 2 seconds.
(3) Set "A : 20" by pressing 2 and 0 buttons of the remote controller.
(4) Set a signal generator mode to mono 300Hz.
(5) Adjust the CH " ▲ " or " ▼ " buttons for 500 ± 10 mVrms.
(6) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

3.5.2 Stereo VCO

Signal	• No signal
Mode	• EE Tuner
Equipment	• Frequency counter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 21
Specification	• 15.73 ± 0.1 kHz

(1) Connect a frequency counter to IC1501- pin 26.
(2) Set the EVR mode by pressing the "K" button of the presetting unit more than 2 seconds.
(3) Set "A : 21" by pressing 2 and 1 buttons of the remote controller.
(4) Adjust the CH " ▲ " or " ▼ " buttons for 15.73 ± 0.1 kHz.
(5) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

3.5.3 Stereo filter

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Oscilloscope
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 22
Specification	• Minimum level

(1) Connect an oscilloscope to IC1501- pin 26.
(2) Set the EVR mode by pressing the "K" button of the presetting unit more than 2 seconds.
(3) Set "A : 22" by twice pressing 2 button of the remote controller.
(4) Adjust the CH " ▲ " or " ▼ " buttons for minimum level.
(5) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

3.5.4 Separation - 1

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Audio level meter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 23
Specification	• Minimum level

(1) Connect an audio level meter to IC1501- pin 26.
(2) Set the EVR mode by pressing the "K" button of the presetting unit more than 2 seconds.
(3) Set "A : 23" by pressing 2 and 3 buttons of the remote controller.
(4) Set a signal generator mode to alternate L-ch 300Hz 14% modulated.
(5) Adjust the CH " ▲ " or " ▼ " buttons for minimum level.
(6) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

3.5.5 Separation - 2

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Audio level meter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 24
Specification	• Minimum level

(1) Connect an audio level meter to IC1501- pin 26.
(2) Set the EVR mode by pressing the "K" button of the presetting unit more than 2 seconds.
(3) Set "A : 24" by pressing 2 and 4 buttons of the remote controller.
(4) Set a signal generator mode to alternate L-ch 5 kHz 14% modulated.
(5) Adjust the CH " ▲ " or " ▼ " buttons for minimum level.
(6) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

3.5.6 SAP VCO

Signal	• No signal
Mode	• EE Tuner
Equipment	• Frequency counter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
EVR mode	• A : 25
Specification	• 78.67 ± 0.5 kHz

(1) Connect a frequency counter to IC1501- pin 26.
(2) Set the EVR mode by pressing the "K" button of the presetting unit more than 2 seconds.
(3) Set "A : 25" by pressing 2 and 5 buttons of the remote controller.
(4) Adjust the CH " ▲ " or " ▼ " buttons for 78.67 ± 0.5 kHz.
(5) Set the normal VCR mode by pressing the "K" button of the presetting unit again so adjustment data is memorized.

3.6 AUDIO CIRCUIT

Notes:
- ***Unless otherwise specified, all measurement point and adjustment parts are located on the MAIN BOARD.***
- ***This adjustment should be done after the video circuit SP and EP REC color level are adjusted.***
- ***GND(Ground) should be taken from the tuner board shield.***

3.6.1 REC FM level

Signal	• AUX • VIDEO : Color bar • AUDIO : No signal
Mode	• REC → PB : EP • S-VHS
Equipment	• Oscilloscope
Measurement point	• TP2253 (A. PB FM)
Trigger slope (–)	• TP111 (D. FF)
Adjustment part	• VR2251 (A. REC. FM)
Specification	• 800 ± 100 mVp-p

(1) Connect an oscilloscope to TP2253.
(2) Record a color bar signal without an audio signal in the S-VHS EP mode then playback.
(3) Adjust VR2251 for 800mVp-p playback level of higher channel level before recording.
(4) Confirm that the lower channel level is more than 550 mVp-p.

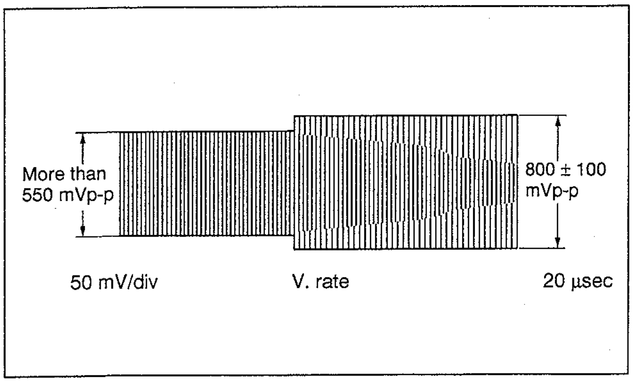


Fig. 3-6-1 Audio REC FM level

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

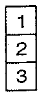
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in µF, (P: PF).
3) All inductance values are in µH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

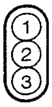
AUX : Active at high

$\overline{\text{AUX}}$ or AUX(L) : Active at low

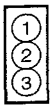
3. Interpreting Connector indications



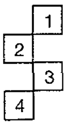
Removable connector



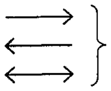
Wire soldered directly on board



Non-removable Board connector

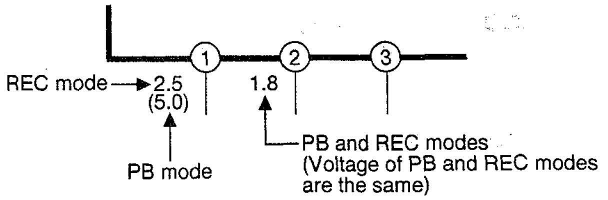


Board to Board


Connected pattern on board
The arrows indicate signal path

4. Voltage measurement

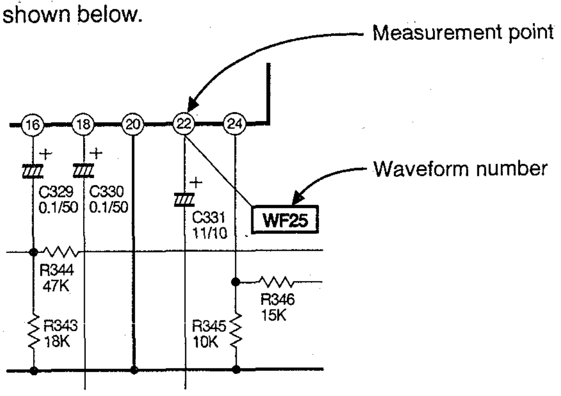
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.


①
②
③
REC mode
2.5
(5.0)
1.8
PB mode
PB and REC modes
(Voltage of PB and REC modes are the same)

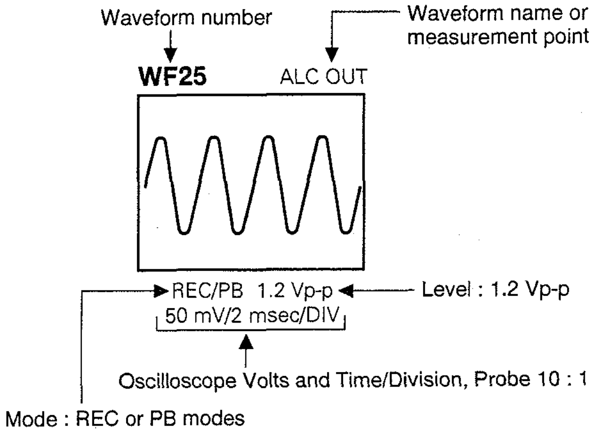
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.


Measurement point
Waveform number
16
18
20
22
24
C329
0.1/50
C330
0.1/50
C331
11/10
WF25
R344
47K
R343
18K
R345
10K
R346
15K

5) Waveform indications


Waveform number
Waveform name or measurement point
WF25
ALC OUT
REC/PB 1.2 Vp-p
Level : 1.2 Vp-p
50 mV/2 msec/DIV
Oscilloscope Volts and Time/Division, Probe 10 : 1
Mode : REC or PB modes

6. Signal path Symbols

The arrows indicate the signal path as follows.

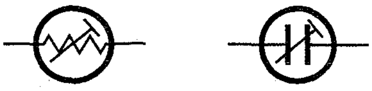
⇨	Playback signal path
⮕	Playback and recording signal path
➡	Recording signal path (including E-E signal path)
⇨▷	Capstan servo path
➡▶	Drum servo path

(Example)

⇨ R-Y	Playback R-Y signal path
➡ Y	Recording Y signal path

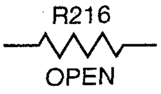
7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.



CIRCUIT BOARD NOTES

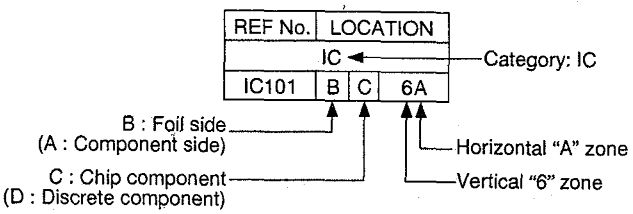
1. Foil and Component sides

1) Foil side (B side) :
Parts on the foil side seen from foil face (pattern face) are indicated.

2) Component side (A side) :
Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

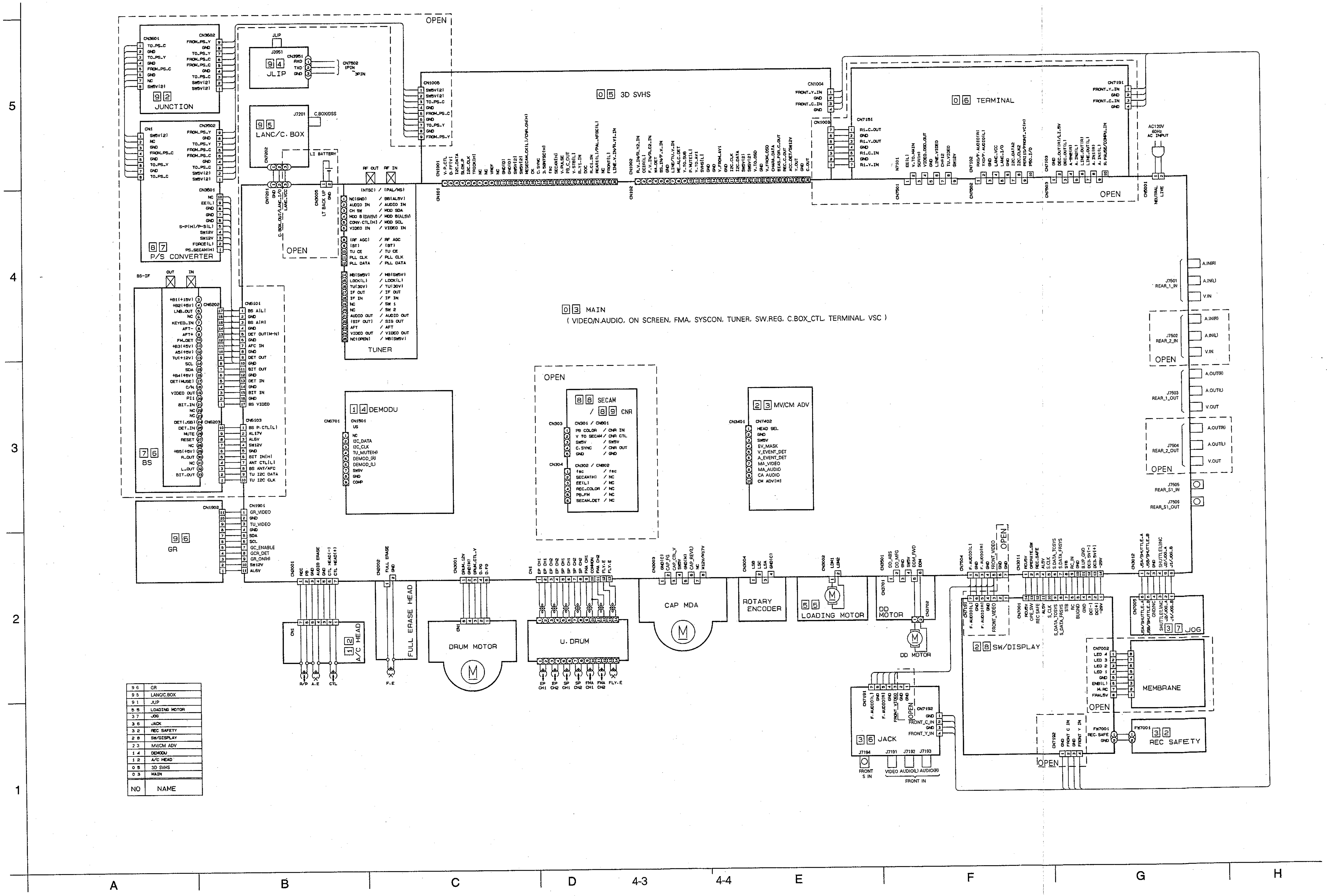
Parts location are indicated by guide scale on the circuit board.


REF No.
LOCATION
IC
Category: IC
IC101
B
C
6A
B : Foil side
(A : Component side)
C : Chip component
(D : Discrete component)
Horizontal "A" zone
Vertical "6" zone

Note:

For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

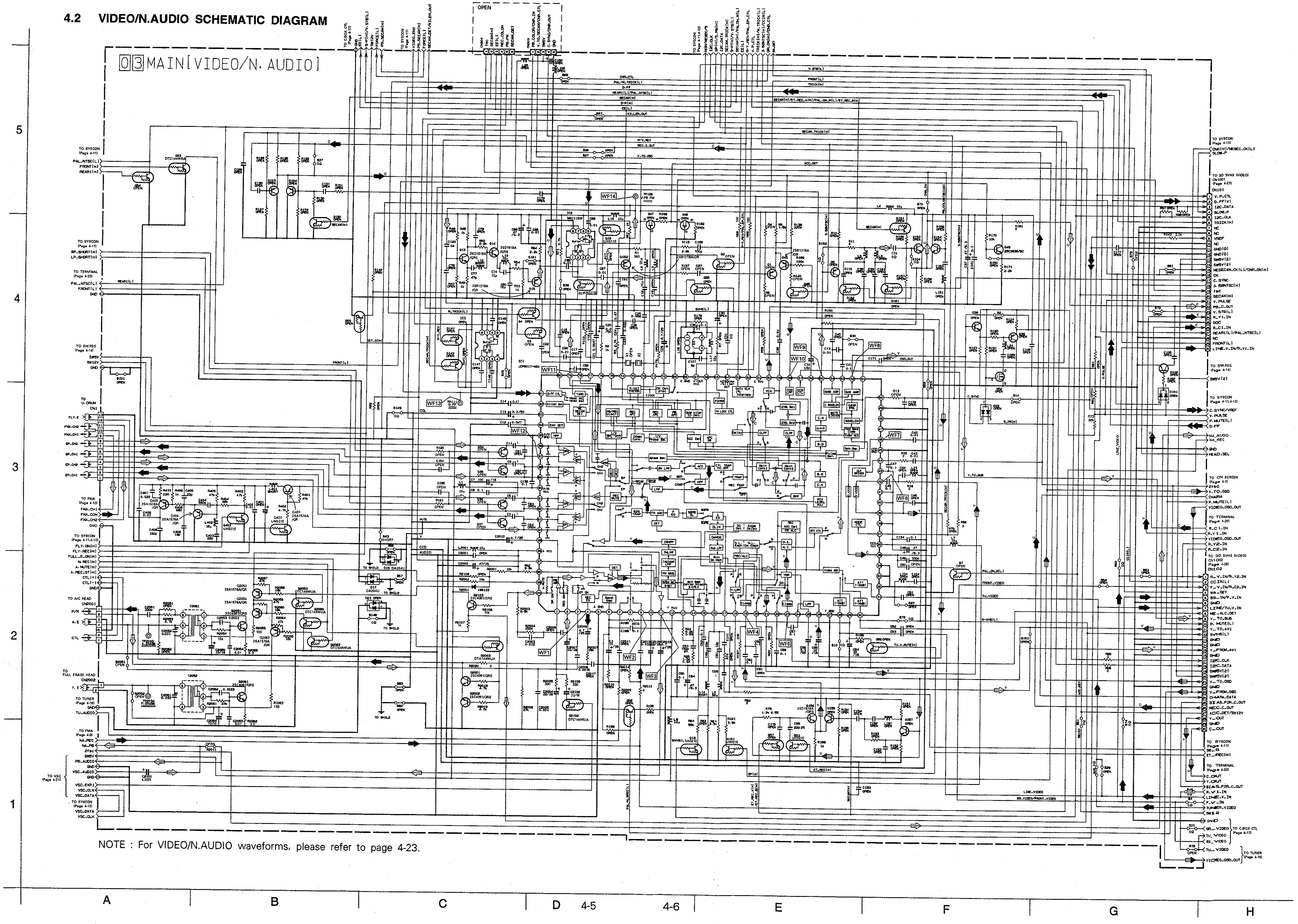
4.1 BOARD INTERCONNECTIONS



OPEN
92 JUNCTION
CN3601
CN3602
94 JLIP
J3951
CN3951
CN7502
95 LANC/C. BOX
J7201
C.BOX/DSS
LT BATTERY
87 P/S CONVERTER
CN1
CN3502
CN3501
BS-IF
OUT
IN
76 BS
CN6202
CN6203
CN5101
CN5103
96 GR
CN1902
CN1901
05 3D SVHS
CN1005
CN1004
CN1003
CN1001
CN1002
06 TERMINAL
CN7191
CN7151
CN7501
CN7502
CN7503
CN5001
AC120V 60Hz AC INPUT
RF OUT
RF IN
TUNER
03 MAIN
(VIDEO/N.AUDIO, ON SCREEN, FMA, SYSCON, TUNER, SW.REG, C.BOX_CTL, TERMINAL, VSC)
14 DEMODU
CN6701
CN1501
88 SECAM / 89 CNR
CN303
CN304
23 MV/CM ADV
CN3401
CN7402
J7501 REAR_1_IN
J7502 REAR_2_IN
J7503 REAR_1_OUT
J7504 REAR_2_OUT
J7505 REAR_S1_IN
J7509 REAR_S1_OUT
12 A/C HEAD
FULL ERASE HEAD
DRUM MOTOR
U. DRUM
CAP MDA
ROTARY ENCODER
55 LOADING MOTOR
DD MOTOR
28 SW/DISPLAY
37 JOG
MEMBRANE
32 REC SAFETY
36 JACK
FRONT S IN
VIDEO AUDIO(L) AUDIO(R)
FRONT IN
1
2
3
4
5
A
B
C
D
E
F
G
H

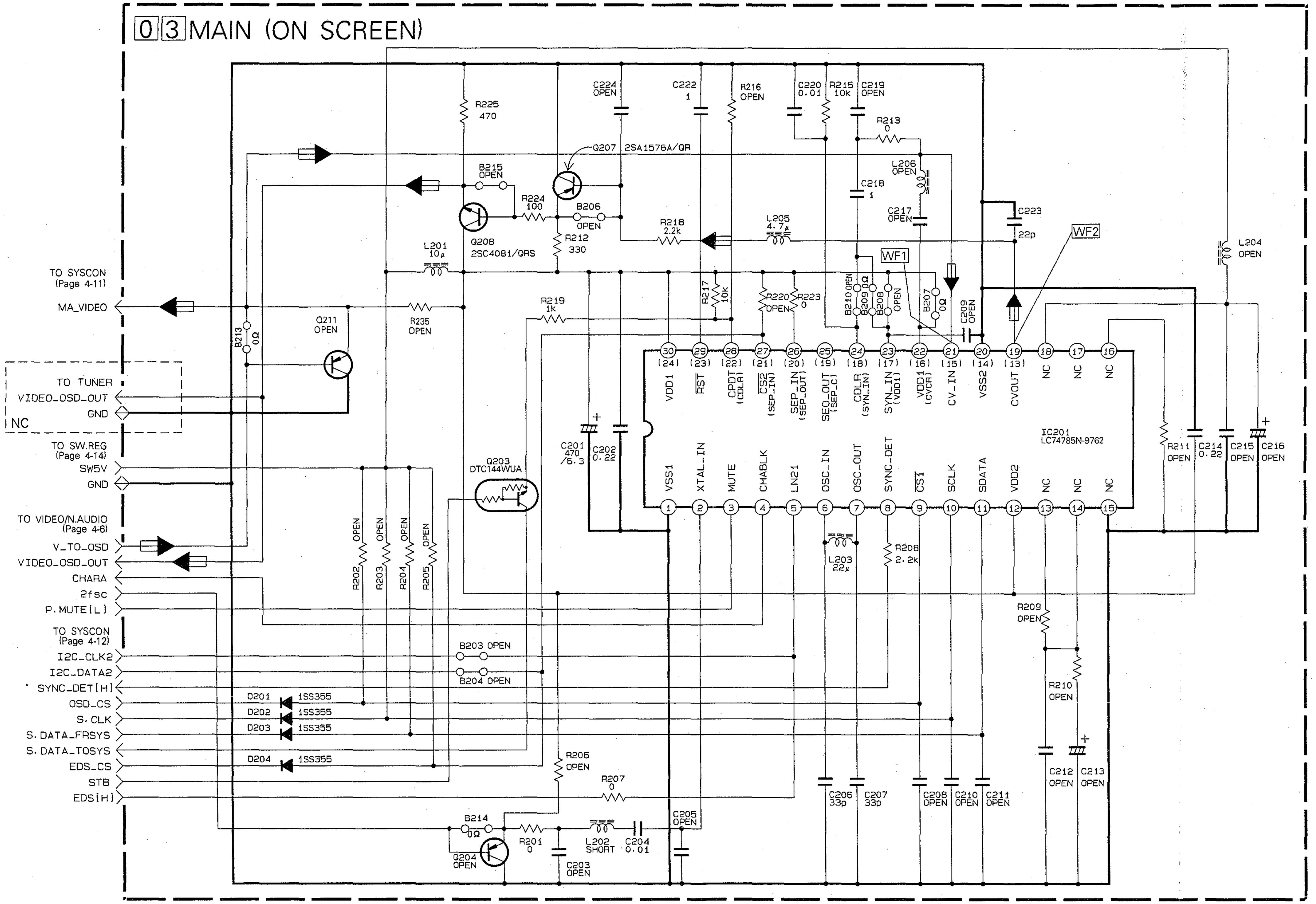
NO	NAME
9 6	GR
9 5	LANC/C.BOX
9 1	JLIP
5 5	LOADING MOTOR
3 7	JOG
3 6	JACK
3 2	REC SAFETY
2 8	SW/DISPLAY
2 3	MV/CM ADV
1 4	DEMODU
1 2	A/C HEAD
0 5	3D SVHS
0 3	MAIN

4.2 VIDEO/N.AUDIO SCHEMATIC DIAGRAM


03 MAIN [VIDEO/N. AUDIO]
OPEN
TO SYSCON
TO SW.REG
TO U.DRUM
TO FMA
TO A/C HEAD
TO FULL ERASE HEAD
TO TUNER
TO VSC
TO 3D SVHS (VIDEO)
TO ON SCREEN
TO TERMINAL
TO C.BOX CTL
IC1
IC2
IC3
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF12
WF13
WF14
A
B
C
D
E
F
G
H
1
2
3
4
5

NOTE : For VIDEO/N.AUDIO waveforms, please refer to page 4-23.

4.3 ON SCREEN SCHEMATIC DIAGRAM

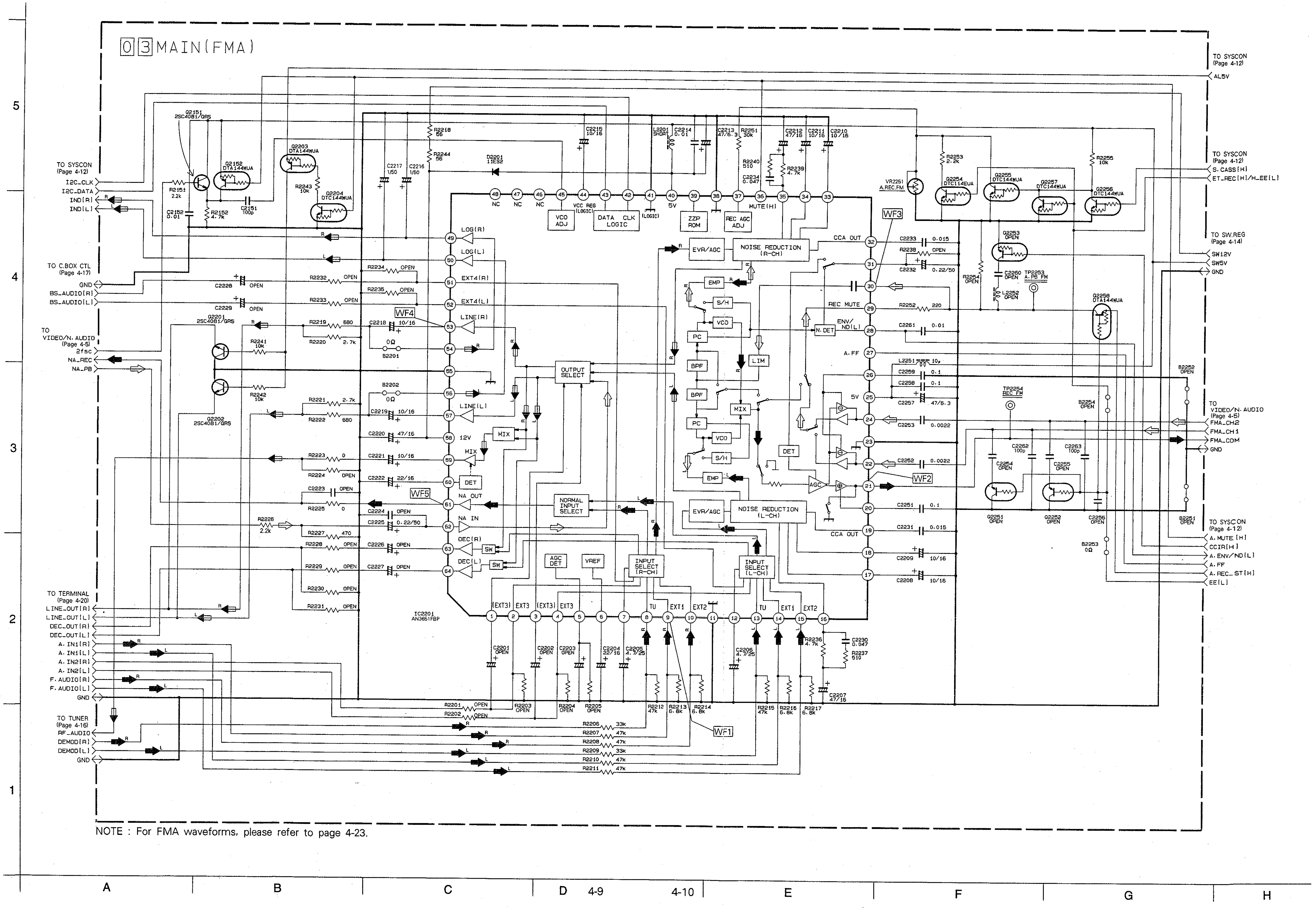

03 MAIN (ON SCREEN)
TO SYSCON (Page 4-11)
MA_VIDEO
TO TUNER
VIDEO_OSD_OUT
GND
NC
TO SW.REG (Page 4-14)
SW5V
GND
TO VIDEO/N.AUDIO (Page 4-6)
V_TO_OSD
VIDEO_OSD_OUT
CHARA
2fsc
P.MUTE[L]
TO SYSCON (Page 4-12)
I2C_CLK2
I2C_DATA2
SYNC_DET[H]
OSD_CS
S.CLK
S.DATA_FRSYS
S.DATA_TOSYS
EDS_CS
STB
EDS[H]
R225 470
Q207 2SA1576A/QR
B215 OPEN
R224 100
B206 OPEN
Q208 2SC4081/QRS
R212 330
L201 10μ
R218 2.2k
L205 4.7μ
C224 OPEN
C222 1
R216 OPEN
C220 0.01
R215 10k
C219 OPEN
R213 0
L206 OPEN
C218 1
C217 OPEN
C223 22p
WF1
WF2
L204 OPEN
B213 0Ω
Q211 OPEN
R235 OPEN
R219 1k
R217 10k
R220 OPEN
R223 0
B210 OPEN
B209 0Ω
B208 OPEN
B207 0Ω
C209 OPEN
C201 470 /6.3
C202 0.22
Q203 DTC144WUA
IC201 LC74785N-9762
VDD1
RST
CPDT (CDLR)
CS2 (SEP_IN)
SEP_IN (SEP_OUT)
SEQ_OUT (SEP_C)
CDLR (SYN_IN)
SYN_IN (VDD1)
VDD1 (CVCR)
CV_IN
VSS2
CVOUT
NC
VSS1
XTAL_IN
MUTE
CHABLK
LN21
OSC_IN
OSC_OUT
SYNC_DET
CS1
SCLK
SDATA
VDD2
R211 OPEN
C214 0.22
C215 OPEN
C216 OPEN
R202 OPEN
R203 OPEN
R204 OPEN
R205 OPEN
L203 22μ
R208 2.2k
R209 OPEN
R210 OPEN
B203 OPEN
B204 OPEN
D201 1SS355
D202 1SS355
D203 1SS355
D204 1SS355
R206 OPEN
R207 0
B214 0Ω
Q204 OPEN
R201 0
L202 SHORT
C204 0.01
C205 OPEN
C203 OPEN
C206 33p
C207 33p
C208 OPEN
C210 OPEN
C211 OPEN
C212 OPEN
C213 OPEN

NOTE : For ON SCREEN waveforms, please refer to page 4-23.

5 4 3 2 1

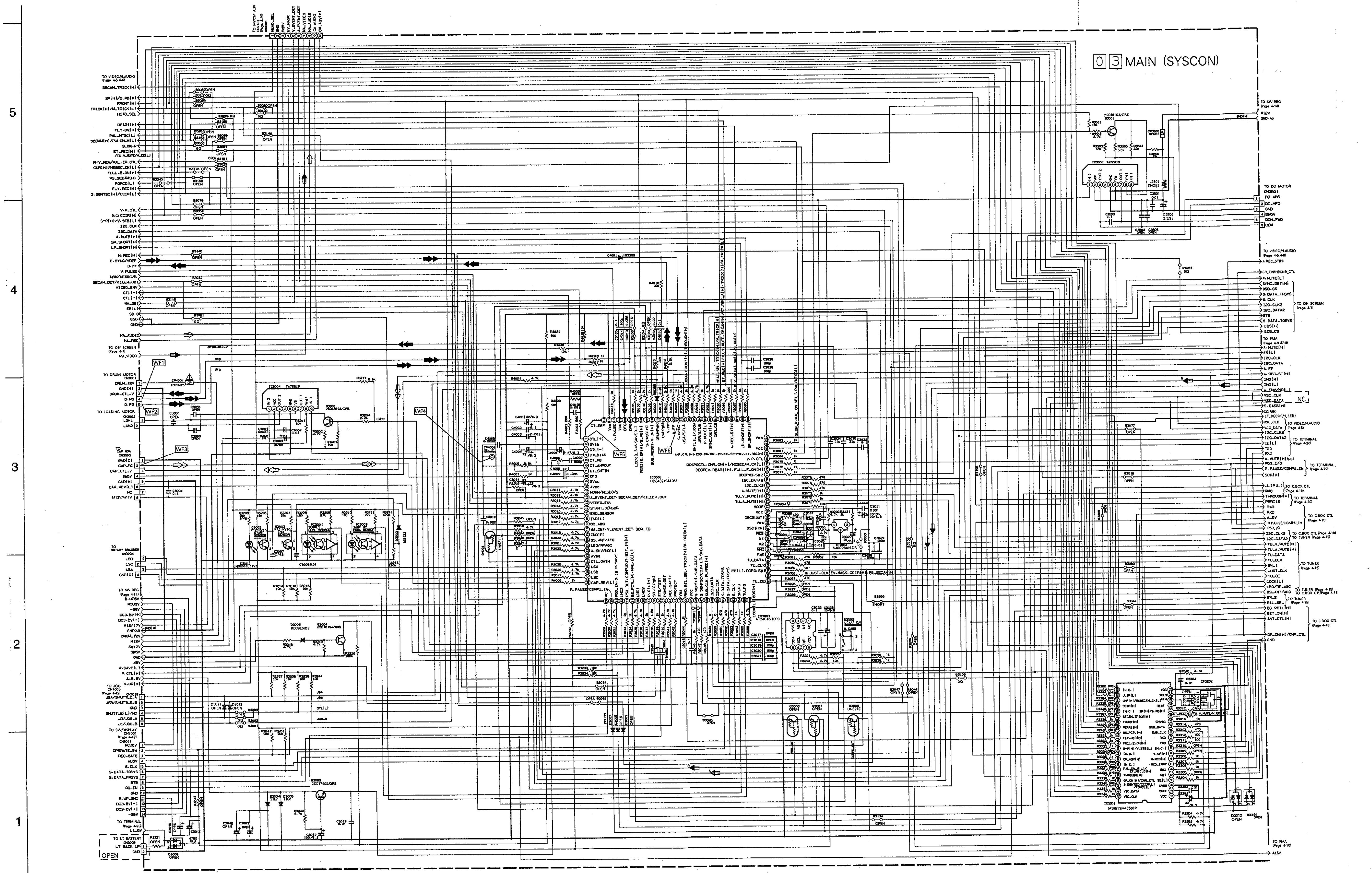
A B C D E F G H

4.4 FMA SCHEMATIC DIAGRAM


03 MAIN(FMA)
TO SYSCON (Page 4-12)
I2C_CLK
I2C_DATA
IND(R)
IND(L)
TO C.BOX CTL (Page 4-17)
GND
BS_AUDIO(R)
BS_AUDIO(L)
TO VIDEO/N. AUDIO (Page 4-5)
2fsc
NA_REC
NA_PB
TO TERMINAL (Page 4-20)
LINE_OUT(R)
LINE_OUT(L)
DEC_OUT(R)
DEC_OUT(L)
A. IN1(R)
A. IN1(L)
A. IN2(R)
A. IN2(L)
F. AUDIO(R)
F. AUDIO(L)
GND
TO TUNER (Page 4-16)
RF_AUDIO
DEMOD(R)
DEMOD(L)
GND
TO SYSCON (Page 4-12)
AL5V
TO SYSCON (Page 4-12)
S. CASS(H)
ET_REC(H)/H_EE(L)
TO SW.REG (Page 4-14)
SW12V
SW5V
GND
TO VIDEO/N. AUDIO (Page 4-5)
FMA_CH2
FMA_CH1
FMA_COM
GND
TO SYSCON (Page 4-12)
A. MUTE (H)
CCIR(H)
A. ENV/ND(L)
A. FF
A. REC_ST(H)
EE(L)
Q2151 2SC4081/QRS
Q2152 DTA144WUA
Q2203 DTA144WUA
Q2204 DTC144WUA
Q2201 2SC4081/QRS
Q2202 2SC4081/QRS
Q2254 DTC114EUA
Q2255 DTC144WUA
Q2257 DTC144WUA
Q2256 DTC144WUA
Q2253 OPEN
Q2258 DTA144WUA
Q2251 OPEN
Q2252 OPEN
IC2201 AN3651FBP
D2201 1SS352
VR2251 A.REC.FM
TP2253 A.FB FM
TP2254 REC FM
L2201 SHORT
L2252 OPEN
L2251 10μ
WF1
WF2
WF3
WF4
WF5
R2218 56
R2244 56
R2151 2.2k
R2152 4.7k
C2152 0.01
C2151 100p
R2243 10k
C2217 1/50
C2216 1/50
C2215 10/16
C2214 0.01
C2213 47/6.3
R2251 30k
R2240 510
C2234 0.047
R2239 4.7k
C2212 47/16
C2211 10/16
C2210 10/16
R2253 2.2k
R2255 10k
C2228 OPEN
C2229 OPEN
R2241 10k
R2242 10k
R2226 2.2k
R2232 OPEN
R2233 OPEN
R2234 OPEN
R2235 OPEN
R2219 680
R2220 2.7k
C2218 10/16
0Ω B2201
B2202 0Ω
R2221 2.7k
R2222 680
C2219 10/16
C2220 47/16
R2223 0
R2224 OPEN
C2221 10/16
C2222 22/16
C2223 OPEN
R2225 0
C2224 OPEN
C2225 0.22/50
R2227 470
R2228 OPEN
C2226 OPEN
R2229 OPEN
C2227 OPEN
R2230 OPEN
R2231 OPEN
LOG(R)
LOG(L)
EXT4(R)
EXT4(L)
LINE(R)
LINE(L)
12V
MIX
DET
NA OUT
NA IN
DEC(R)
DEC(L)
SW
OUTPUT SELECT
NORMAL INPUT SELECT
AGC DET
VREF
INPUT SELECT (R-CH)
INPUT SELECT (L-CH)
VCO ADJ
VCC REG (LOGIC)
DATA CLK LOGIC
(LOGIC)
5V
ZZP ROM
REC AGC ADJ
MUTE(H)
NC
EVR/AGC
NOISE REDUCTION (R-CH)
NOISE REDUCTION (L-CH)
EMP
S/H
VCO
PC
BPF
LIM
N. DET
AGC
CCA OUT
REC MUTE
ENV/ND(L)
A. FF
C2233 0.015
R2238 OPEN
C2232 0.22/50
R2254 OPEN
C2260 OPEN
R2252 220
C2261 0.01
C2259 0.1
C2258 0.1
C2257 47/6.3
C2253 0.0022
C2252 0.0022
C2251 0.1
C2231 0.015
C2209 10/16
C2208 10/16
C2262 100p
C2263 100p
C2254 OPEN
C2255 OPEN
C2256 OPEN
B2252 OPEN
B2254 OPEN
B2251 OPEN
B2253 0Ω
EXT3
EXT2
EXT1
TU
C2201 OPEN
C2202 OPEN
C2203 OPEN
C2204 22/16
C2205 4.7/25
C2206 4.7/25
R2236 4.7k
C2230 0.047
R2237 510
C2207 47/16
R2201 OPEN
R2202 OPEN
R2203 OPEN
R2204 OPEN
R2205 OPEN
R2212 47k
R2213 6.8k
R2214 6.8k
R2215 47k
R2216 6.8k
R2217 6.8k
R2206 33k
R2207 47k
R2208 47k
R2209 33k
R2210 47k
R2211 47k
1
2
3
4
5
A
B
C
D
E
F
G
H

NOTE : For FMA waveforms, please refer to page 4-23.

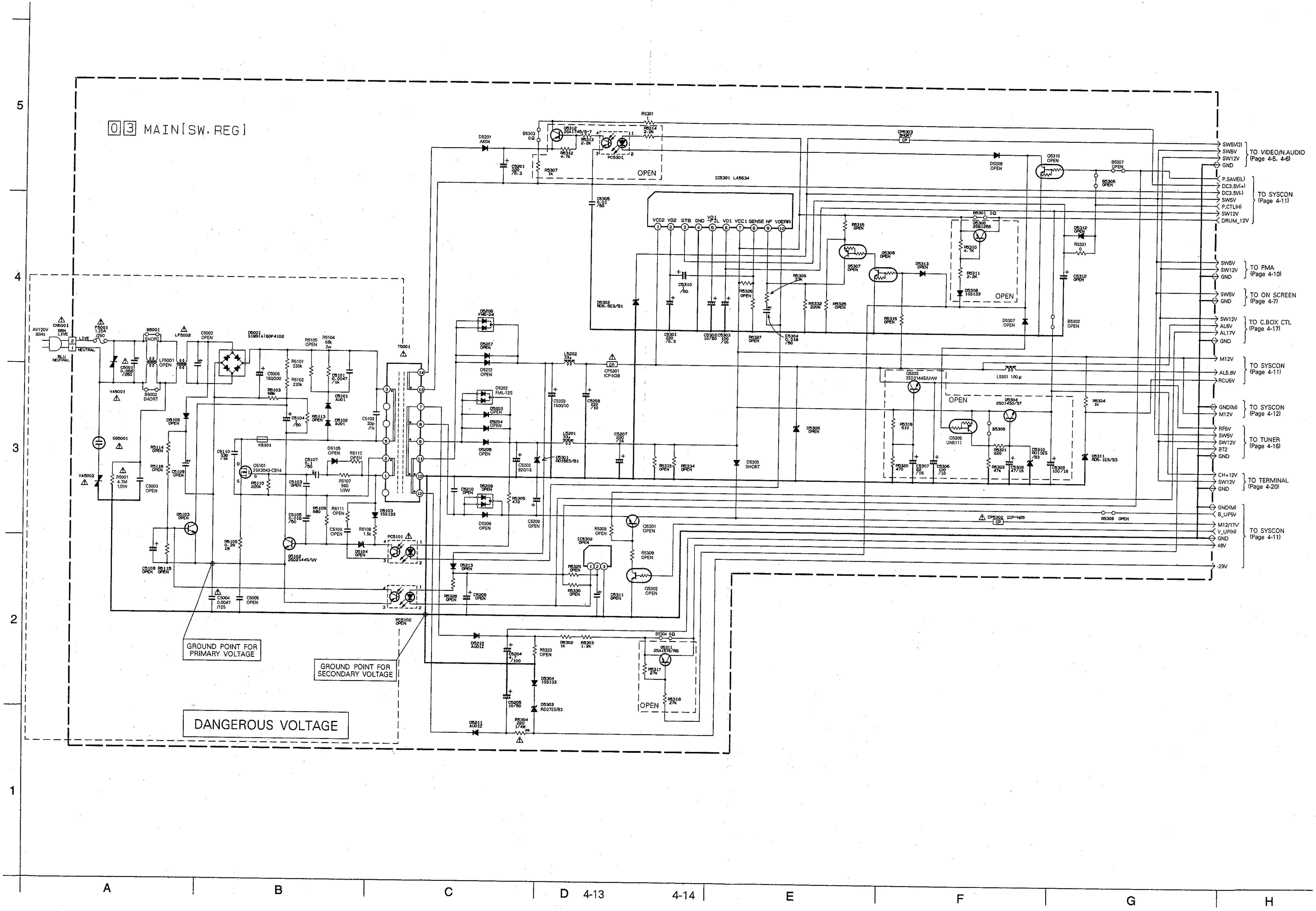
4.5 SYSTEM CONTROL SCHEMATIC DIAGRAM


03 MAIN (SYSCON)
WF1
WF2
WF3
WF4
WF5
WF6
IC3001
HD6432194A06F
IC3004 TA7291S
IC3501 TA7291S
IC3351
M38513M4C56FP
OPEN
1
2
3
4
5

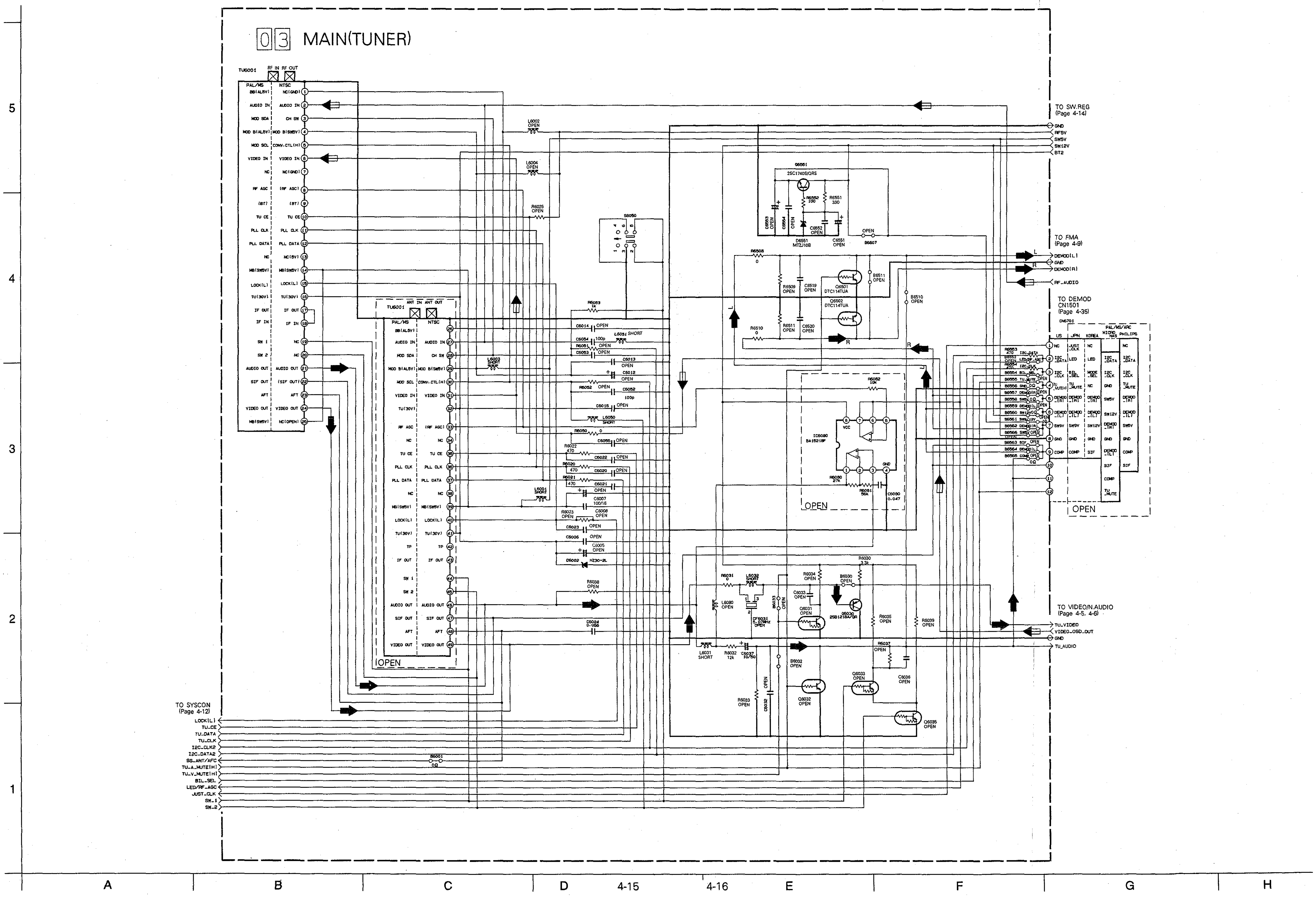
NOTES : 1. For SYSCON waveforms, please refer to page 4-23.
2. The SYSTEM CONTROL circuit of this model has an automatic recognition about the ON-OFF control of the DOCTOR SYSTEM.

A
B
C
D
E
F
G
H

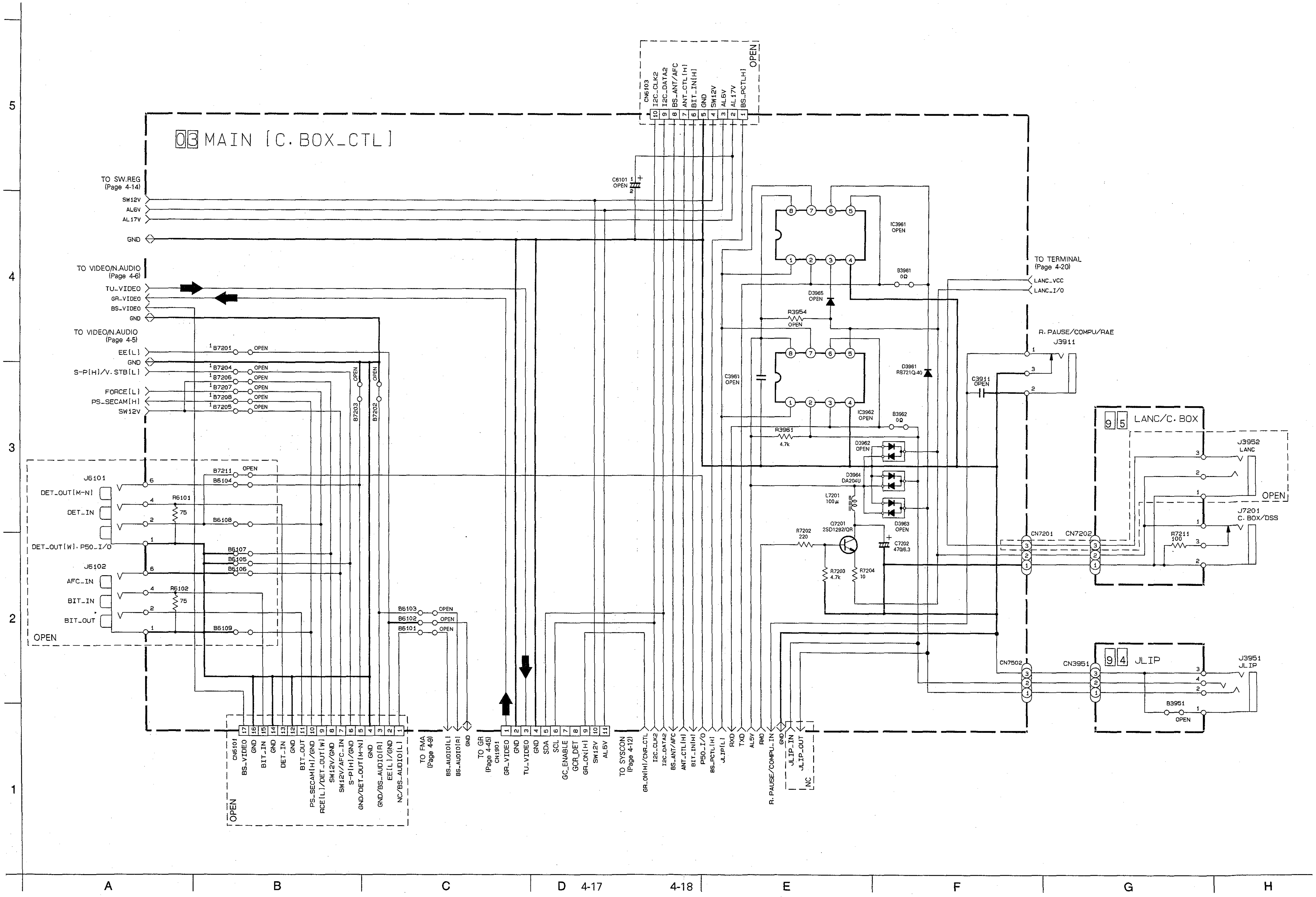
4.6 SWITCHING REGULATOR SCHEMATIC DIAGRAM


03 MAIN[SW.REG]
AV120V 60Hz
CN5001
BRN LIVE
BLU NEUTRAL
F5001 1.25A /250
B6001 SHORT
B5002 SHORT
LF5001 OPEN
LF5002
C5002 OPEN
D5001 S1WB(A)60F4102
C5001 0.068 /250
VA5001
VA5002
SG5001
R5001 4.7M 1/2W
C5003 OPEN
C5006 150/200
R5103 68k
R5101 220k
R5102 220k
R5105 OPEN
R5104 68k 2w
C5101 0.0047 /1k
D5101 AU01
D5102 AU01
C5104 /50
R5113 OPEN
C5102 33p /1k
T5001
D5105 OPEN
R5114 OPEN
R5116 OPEN
C5109 OPEN
C5110 33p /1k
K5101
Q5101 2SK2043-CB14
R5110 220k
C5103 OPEN
C5107 /50
D5105 OPEN
R5112 OPEN
R5107 560 1/2W
R5109 680
R5111 OPEN
C5105 0.018 /50
C5108 OPEN
R5108 1.5k
D5103 1SS133
D5104 OPEN
Q5103 OPEN
Q5102 2SD2144S/UV
R5106 0.39 1W
C5106 OPEN
R5115 OPEN
C5004 0.0047 /125
C5005 OPEN
PC5101
PC5102 OPEN
GROUND POINT FOR PRIMARY VOLTAGE
GROUND POINT FOR SECONDARY VOLTAGE
DANGEROUS VOLTAGE
D5205 FMB-24
D5207 OPEN
D5212 OPEN
D5202 FML-12S
D5203 OPEN
D5204 OPEN
D5206 OPEN
C5210 OPEN
D5208 OPEN
D5209 OPEN
R5305 470
C5206 OPEN
C5202 820/16
L5202 33μ
C5203 1500/10
C5208 220 /10
CP5301 ICP-N38
L5201 33μ
C5207 220 /16
D5301 RD15ES/B1
D5213 OPEN
C5209 OPEN
R5328 OPEN
D5201 AK04
C5201 220 /6.3
B5303 0Ω
Q5312 2SA1745/6-7
R5312 4.7k
R5313 2.2k
R5314 2.2k
R5301
R5307 1k
PC5301
OPEN
C5305 0.01 /50
CP5303 SHORT
IC5301 LA5634
VCC2 VO2 STB GND V01 FIL VO1 VCC1 SENSE NF VOERR
1 2 3 4 5 6 7 8 9 10
D5302 RD6.8ES/B1
C5310 /50
C5301 220 /6.3
C5302 10/50
C5303 100 /16
R5326 OPEN
R5327 OPEN
R5306 33k
C5304 0.018 /50
R5332 220k
R5325 OPEN
R5333 OPEN
R5334 OPEN
D5305 SHORT
D5306 OPEN
R5316 OPEN
Q5307 OPEN
Q5308 OPEN
D5313 OPEN
D5309 OPEN
Q5310 OPEN
B5307 OPEN
B5305 OPEN
B5301 0Ω
Q5306 2SB1256
R5310 4.7k
R5311 2.2k
D5308 1SS133
OPEN
D5312 OPEN
R5331 0
C5312 OPEN
D5307 OPEN
B5302 OPEN
R5315 OPEN
Q5303 2SD2144S/UVW
L5301 100μ
OPEN
Q5304 2SD1450/ST
R5324 1k
R5319 510
Q5305 UN5111
B5308
R5321 220
D5310 RD11ES /B3
D5311 RD6.1ES/B3
R5320 470
C5307 22 /16
C5306 100 /10
R5322 47k
C5308 47/16
C5309 100/16
CP5302 ICP-N25
B5306 OPEN
R5308 OPEN
Q5301 OPEN
IC5302 OPEN
R5329 OPEN
R5330 OPEN
C5311 OPEN
R5309 OPEN
Q5302 OPEN
D5210 AU01Z
C5204 4.7 /100
R5323 OPEN
R5302 1k
R5303 1.2k
B5304 0Ω
Q5311 2SA1576/RS
R5317 27k
R5318 27k
OPEN
D5304 1SS133
C5205 10/50
D5303 RD27ES/B3
R5304 220 1/4W
D5211 AU01Z
SW5V(2)
SW5V
SW12V
GND
TO VIDEO/N.AUDIO (Page 4-5, 4-6)
P.SAVE(L)
DC3.5V(+)
DC3.5V(-)
SW5V
P.CTL(H)
SW12V
DRUM_12V
TO SYSCON (Page 4-11)
SW5V
SW12V
GND
TO FMA (Page 4-10)
SW5V
GND
TO ON SCREEN (Page 4-7)
SW12V
AL6V
AL17V
GND
TO C.BOX CTL (Page 4-17)
M12V
AL5.8V
RCU5V
TO SYSCON (Page 4-11)
GND(M)
M12V
TO SYSCON (Page 4-12)
RF5V
SW5V
SW12V
BT2
GND
TO TUNER (Page 4-16)
CH+12V
SW12V
GND
TO TERMINAL (Page 4-20)
GND(M)
B_UP5V
M12/17V
V_UP(H)
GND
48V
-29V
TO SYSCON (Page 4-11)
5
4
3
2
1
A
B
C
D
E
F
G
H

4.7 TUNER SCHEMATIC DIAGRAM

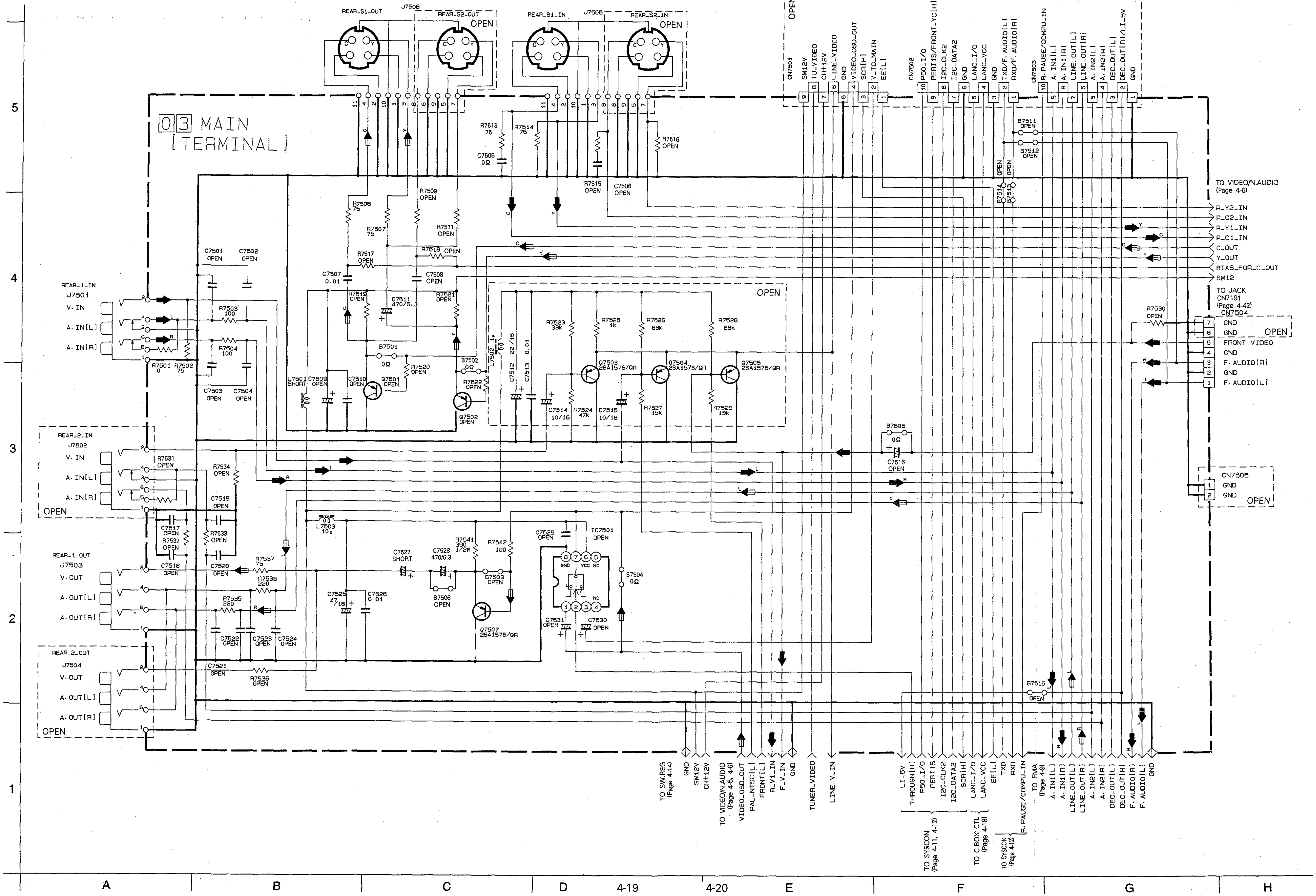

03 MAIN(TUNER)
TU6001
RF IN
RF OUT
PAL/MS
NTSC
ANT IN
ANT OUT
TO SW.REG
(Page 4-14)
GND
RF5V
SW5V
SW12V
BT2
Q6561
2SC1740S/QRS
R6552
100
R6551
330
D6551
MTZJ10B
C6551
OPEN
C6552
OPEN
C6553
OPEN
C6554
OPEN
B6607
OPEN
S6050
TO FMA
(Page 4-9)
DEMOD(L)
GND
DEMOD(R)
RF_AUDIO
L
R
Q6501
DTC114TUA
Q6502
DTC114TUA
R6508
0
R6510
0
B6511
OPEN
B6510
OPEN
R6509
OPEN
C6519
OPEN
R6511
OPEN
C6520
OPEN
TO DEMOD
CN1501
(Page 4-35)
CN5701
US
JPN
KOREA
PAL/MS/ARC
MICRO NAS
PHILIPS
NC
JUST_CLK
I2C_DATA
I2C_CLK
LED
BIL_SEL
MODE_SEL
TU_MUTE
DEMOD_(R)
DEMOD_(L)
SW9V
SW12V
SW5V
GND
COMP
SIF
OPEN
IC5080
BA15218F
VCC
GND
R5082
10k
R5080
27k
R5081
56k
C5080
0.047
L6002
OPEN
L6004
OPEN
R6025
OPEN
L6003
SHORT
L6001
SHORT
R6083
1k
C6014
OPEN
L6051
SHORT
C6054
100p
R6051
OPEN
C6053
OPEN
C6013
OPEN
C6012
OPEN
R6052
OPEN
C6052
100p
C6015
OPEN
L6050
SHORT
R6050
0
C6055
OPEN
R6022
470
C6022
OPEN
R6020
470
C6020
OPEN
R6021
470
C6021
OPEN
C6007
100/16
R6023
OPEN
C6008
OPEN
C6023
OPEN
C6006
OPEN
C6005
OPEN
D6002
HZ30-2L
R6038
OPEN
C6024
0.056
R6031
0
L6032
SHORT
L6030
OPEN
CF6031
5.5MHz
OPEN
R6033
OPEN
C6033
OPEN
Q6031
OPEN
R6034
OPEN
B6030
OPEN
R6030
3.3k
Q6030
2SB1218A/QR
R6035
OPEN
R6039
OPEN
R6037
OPEN
L6031
SHORT
R6032
12k
C6037
10/50
B6032
OPEN
C6032
OPEN
Q6032
OPEN
R6033
OPEN
Q6033
OPEN
C6036
OPEN
Q6035
OPEN
TO VIDEO/N.AUDIO
(Page 4-5, 4-6)
TU_VIDEO
VIDEO_OSD_OUT
GND
TU_AUDIO
TO SYSCON
(Page 4-12)
LOCK(L)
TU_CE
TU_DATA
TU_CLK
I2C_CLK2
I2C_DATA2
BS_ANT/AFC
TU_A_MUTE(H)
TU_V_MUTE(H)
BIL_SEL
LED/RF_AGC
JUST_CLK
SW_1
SW_2
B6001
0Ω
OPEN
1
2
3
4
5
A
B
C
D
E
F
G
H

4.8 C.BOX CTL, JLIP AND LANC/C.BOX SCHEMATIC DIAGRAMS

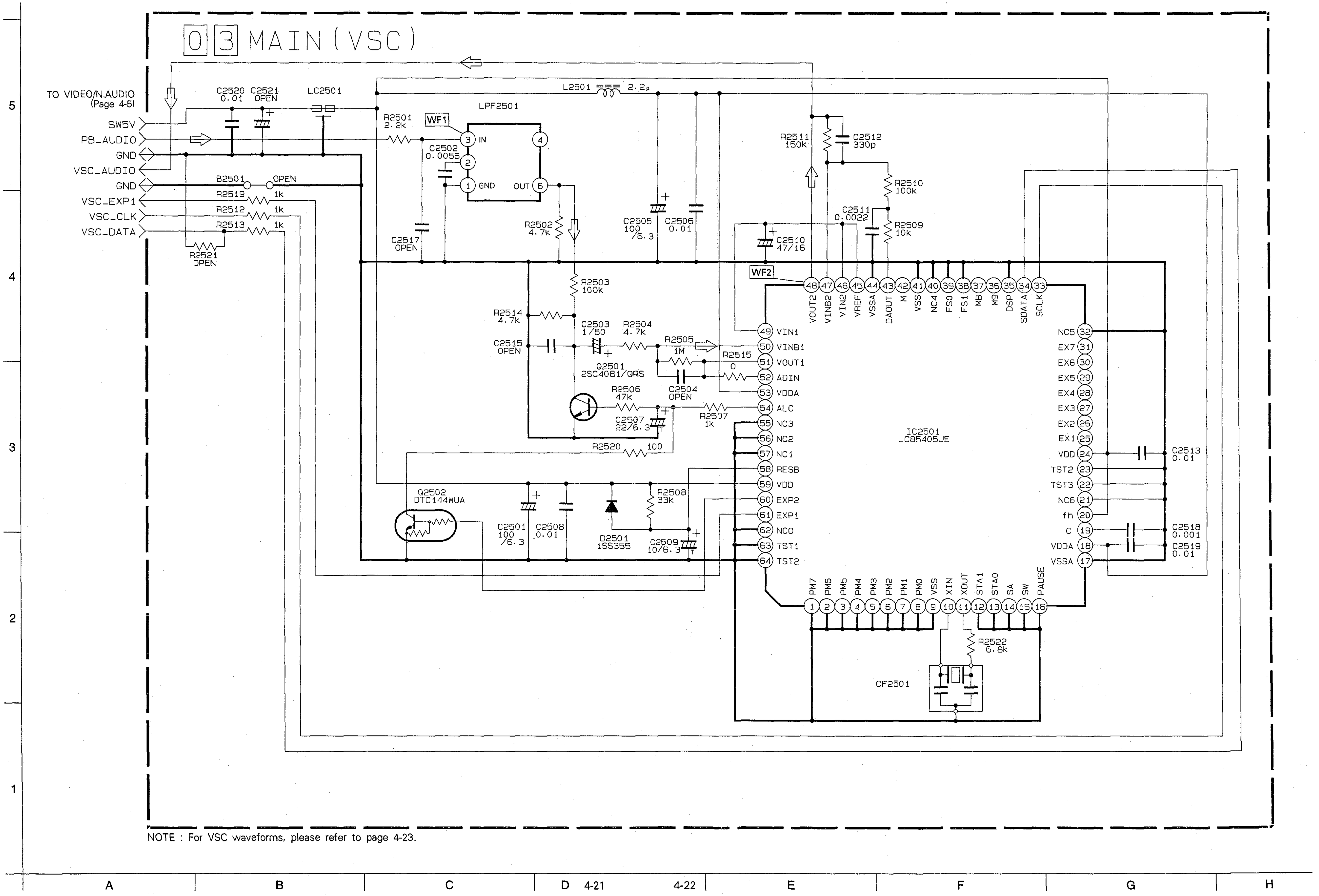


03 MAIN [C.BOX_CTL]
CN6103
10 I2C_CLK2
9 I2C_DATA2
8 BS_ANT/AFC
7 ANT_CTL[H]
6 BIT_IN[H]
5 GND
4 SW12V
3 AL6V
2 AL17V
1 BS_PCTL[H]
OPEN
TO SW.REG (Page 4-14)
SW12V
AL6V
AL17V
GND
C6101 OPEN
TO VIDEO/N.AUDIO (Page 4-6)
TU_VIDEO
GR_VIDEO
BS_VIDEO
GND
TO VIDEO/N.AUDIO (Page 4-5)
EE[L]
GND
S-P[H]/V.STB[L]
FORCE[L]
PS_SECAM[H]
SW12V
B7201 OPEN
B7204 OPEN
B7206 OPEN
B7207 OPEN
B7208 OPEN
B7205 OPEN
B7203 OPEN
B7202 OPEN
J6101
DET_OUT[M-N]
DET_IN
DET_OUT[W]·P50_I/O
R6101 75
B7211 OPEN
B5104
B6108
B6107
B6105
B6106
J6102
AFC_IN
BIT_IN
BIT_OUT
R6102 75
B6109
OPEN
B6103 OPEN
B6102 OPEN
B6101 OPEN
IC3961 OPEN
B3961 0Ω
D3965 OPEN
R3954 OPEN
C3961 OPEN
D3961 RB721Q-40
IC3962 OPEN
B3962 0Ω
R3961 4.7k
D3962 OPEN
D3964 DA204U
L7201 100µ
D3963 OPEN
Q7201 2SD1292/QR
R7202 220
C7202 470/6.3
R7203 4.7k
R7204 10
TO TERMINAL (Page 4-20)
LANC_VCC
LANC_I/O
R. PAUSE/COMPU/RAE
J3911
C3911 OPEN
95 LANC/C. BOX
J3952 LANC
OPEN
J7201 C. BOX/DSS
R7211 100
CN7201
CN7202
CN7502
CN3951
94 JLIP
J3951 JLIP
B3951 OPEN
CN6101
17 BS_VIDEO
16 GND
15 BIT_IN
14 GND
13 DET_IN
12 GND
11 BIT_OUT
10 PS_SECAM[H]/GND
9 RCE[L]/DET_OUT[W]
8 SW12V/AFC_IN
7 SW12V/AFC_IN
6 S-P[H]/GND
5 GND/DET_OUT[M-N]
4 GND
3 GND/BS_AUDIO[R]
2 EE[L]/GND
1 NC/BS_AUDIO[L]
OPEN
TO FMA (Page 4-9)
BS_AUDIO[L]
BS_AUDIO[R]
GND
TO GR (Page 4-45)
CN1901
1 GR_VIDEO
2 GND
3 TU_VIDEO
4 GND
5 SDA
6 SCL
7 GC_ENABLE
8 GCR_DET
9 GR_ON[H]
10 SW12V
11 AL6V
TO SYSCON (Page 4-12)
GR_ON[H]/CNR_CTL
I2C_CLK2
I2C_DATA2
BS_ANT/AFC
ANT_CTL[H]
BIT_IN[H]
P50_I/O
BS_PCTL[H]
JLIP[L]
RXD
TXD
AL5V
RMO
R. PAUSE/COMPU_IN
GND
JLIP_IN
JLIP_OUT
NC
1
2
3
4
5
A
B
C
D
E
F
G
H

4.9 TERMINAL SCHEMATIC DIAGRAM


03 MAIN
[TERMINAL]
REAR_S1_OUT
J7506
REAR_S2_OUT
OPEN
REAR_S1_IN
J7505
REAR_S2_IN
OPEN
REAR_1_IN
J7501
V. IN
A. IN[L]
A. IN[R]
REAR_2_IN
J7502
V. IN
A. IN[L]
A. IN[R]
OPEN
REAR_1_OUT
J7503
V. OUT
A. OUT[L]
A. OUT[R]
REAR_2_OUT
J7504
V. OUT
A. OUT[L]
A. OUT[R]
OPEN
R7501 0
R7502 75
R7503 100
R7504 100
C7501 OPEN
C7502 OPEN
C7503 OPEN
C7504 OPEN
R7506 75
R7507 75
R7509 OPEN
R7511 OPEN
R7517 OPEN
R7518 OPEN
C7507 0.01
C7508 OPEN
R7519 OPEN
C7511 470/6.3
R7521 OPEN
B7501 0Ω
R7520 OPEN
Q7501 OPEN
C7510 OPEN
L7501 SHORT
C7509 OPEN
B7502 0Ω
R7522 OPEN
Q7502 OPEN
L7502 1μ
R7513 75
R7514 75
C7505 0Ω
R7515 OPEN
C7506 OPEN
R7516 OPEN
C7512 22/16
C7513 0.01
R7523 33k
R7525 1k
R7526 68k
R7528 68k
Q7503 2SA1576/QR
Q7504 2SA1576/QR
Q7505 2SA1576/QR
C7514 10/16
R7524 47k
C7515 10/16
R7527 15k
R7529 15k
R7531 OPEN
R7534 OPEN
C7519 OPEN
C7517 OPEN
R7532 OPEN
R7533 OPEN
C7518 OPEN
C7520 OPEN
R7537 75
R7538 220
R7535 220
C7522 OPEN
C7523 OPEN
C7524 OPEN
C7521 OPEN
R7536 OPEN
L7503 10μ
C7525 47/16
C7526 0.01
C7527 SHORT
C7528 470/6.3
B7506 OPEN
R7541 390 1/2W
R7542 100
B7503 OPEN
Q7507 2SA1576/QR
C7529 OPEN
IC7501 OPEN
GND VCC NC
NC
C7531 OPEN
C7530 OPEN
B7504 0Ω
B7505 0Ω
C7516 OPEN
B7511 OPEN
B7512 OPEN
B7514 OPEN
B7513 OPEN
B7515 OPEN
R7530 OPEN
CN7501
SW12V
TU_VIDEO
CH+12V
LINE_VIDEO
GND
VIDEO_OSD_OUT
SCR[H]
V_TO_MAIN
EE[L]
CN7502
P50_I/O
PERI1S/FRONT_YC[H]
I2C_CLK2
I2C_DATA2
GND
LANC_I/O
LANC_VCC
GND
TXD/F. AUDIO[L]
RXD/F. AUDIO[R]
CN7503
R. PAUSE/COMPU_IN
A. IN1[L]
A. IN1[R]
LINE_OUT[L]
LINE_OUT[R]
A. IN2[L]
A. IN2[R]
DEC_OUT[R]
DEC_OUT[R]/LI_5V
GND
TO VIDEO/N.AUDIO (Page 4-6)
R_Y2_IN
R_C2_IN
R_Y1_IN
R_C1_IN
C_OUT
Y_OUT
BIAS_FOR_C_OUT
SW12
TO JACK CN7191 (Page 4-42)
CN7504
GND
GND
FRONT VIDEO
GND
F. AUDIO[R]
GND
F. AUDIO[L]
CN7505
GND
GND
TO SW.REG (Page 4-14)
GND
SW12V
CH+12V
TO VIDEO/N.AUDIO (Page 4-5, 4-6)
VIDEO_OSD_OUT
PAL_NTSC[L]
FRONT[L]
R_V1_IN
F_V_IN
GND
TUNER_VIDEO
LINE_V_IN
TO SYSCON (Page 4-11, 4-12)
LI_5V
THROUGH[H]
P50_I/O
PERI1S
I2C_CLK2
I2C_DATA2
SCR[H]
TO C.BOX CTL (Page 4-18)
LANC_I/O
LANC_VCC
EE[L]
TO SYSCON (Page 4-12)
TXD
RXD
R. PAUSE/COMPU_IN
TO FMA (Page 4-9)
A. IN1[L]
A. IN1[R]
LINE_OUT[L]
LINE_OUT[R]
A. IN2[L]
A. IN2[R]
DEC_OUT[L]
DEC_OUT[R]
F. AUDIO[R]
F. AUDIO[L]
GND
1
2
3
4
5
A
B
C
D
E
F
G
H

4.10 VSC SCHEMATIC DIAGRAM

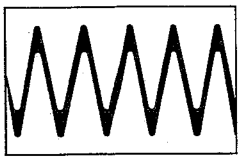

03 MAIN (VSC)
TO VIDEO/N.AUDIO (Page 4-5)
SW5V
PB_AUDIO
GND
VSC_AUDIO
GND
VSC_EXP1
VSC_CLK
VSC_DATA
C2520 0.01
C2521 OPEN
LC2501
L2501 2.2μ
LPF2501
R2501 2.2k
WF1
C2502 0.0056
IN
GND
OUT
B2501 OPEN
R2519 1k
R2512 1k
R2513 1k
R2521 OPEN
C2517 OPEN
R2502 4.7k
C2505 100 /6.3
C2506 0.01
R2503 100k
R2514 4.7k
C2515 OPEN
C2503 1/50
R2504 4.7k
R2505 1M
R2515 0
Q2501 2SC4081/QRS
R2506 47k
C2504 OPEN
C2507 22/6.3
R2507 1k
R2520 100
Q2502 DTC144WUA
C2501 100 /6.3
C2508 0.01
D2501 1SS355
R2508 33k
C2509 10/6.3
R2511 150k
C2512 330p
R2510 100k
C2511 0.0022
R2509 10k
C2510 47/16
WF2
IC2501 LC85405JE
48 VOUT2
47 VINB2
46 VIN2
45 VREF
44 VSSA
43 DAOUT
42 M
41 VSS
40 NC4
39 FS0
38 FS1
37 MB
36 M9
35 DSP
34 SDATA
33 SCLK
49 VIN1
50 VINB1
51 VOUT1
52 ADIN
53 VDDA
54 ALC
55 NC3
56 NC2
57 NC1
58 RESB
59 VDD
60 EXP2
61 EXP1
62 NCO
63 TST1
64 TST2
32 NC5
31 EX7
30 EX6
29 EX5
28 EX4
27 EX3
26 EX2
25 EX1
24 VDD
23 TST2
22 TST3
21 NC6
20 fh
19 C
18 VDDA
17 VSSA
1 PM7
2 PM6
3 PM5
4 PM4
5 PM3
6 PM2
7 PM1
8 PM0
9 VSS
10 XIN
11 XOUT
12 STA1
13 STA0
14 SA
15 SW
16 PAUSE
C2513 0.01
C2518 0.001
C2519 0.01
R2522 6.8k
CF2501
5
4
3
2
1
A
B
C
D
4-21
4-22
E
F
G
H

NOTE : For VSC waveforms, please refer to page 4-23.

WAVEFORMS

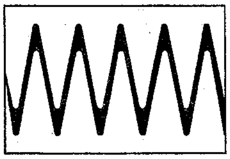
— VIDEO/N.AUDIO —

WF1 IC1-4



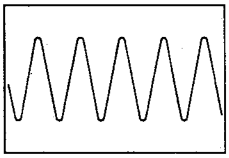
REC 0.94 Vp-p
20 mV/0.5 msec/DIV

WF2 IC1-9



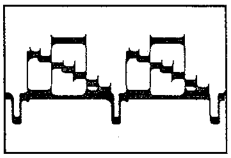
REC 0.16 Vp-p
2 mV/0.5 msec/DIV

WF3 IC1-11



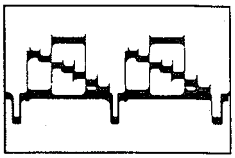
PB 0.6 Vp-p
10 mV/0.5 msec/DIV

WF4 IC1-19



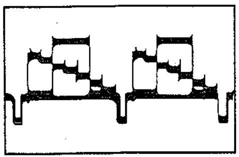
REC/PB 0.54 Vp-p
20 mV/20 µsec/DIV

WF5 IC1-23



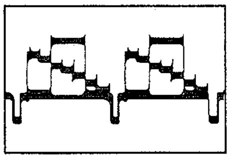
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

WF6-1 IC1-42



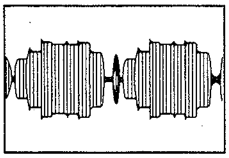
REC 0.44 Vp-p
10 mV/20 µsec/DIV

WF6-2 IC1-42



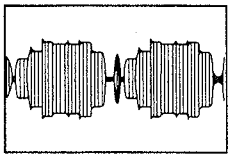
PB 0.43 Vp-p
10 mV/20 µsec/DIV

WF7-1 IC1-46



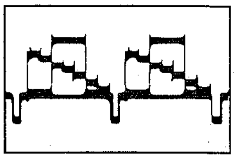
REC 0.34 Vp-p
10 mV20 µsec/DIV

WF7-2 IC1-46



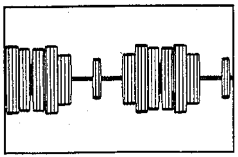
PB 0.3 Vp-p
10 mV/20 µsec/DIV

WF8 IC1-52



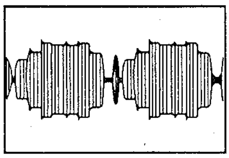
PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF9 IC1-55



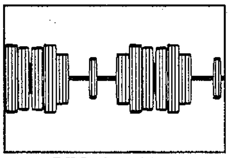
PB 0.7 Vp-p
20 mV/20 µsec/DIV

WF10 IC1-58



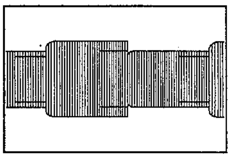
REC/PB 0.49 Vp-p
20 mV/20 µsec/DIV

WF11-1 IC1-78



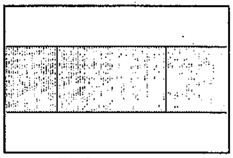
REC 0.74 Vp-p
20 mV/20 µsec/DIV

WF11-2 IC1-78



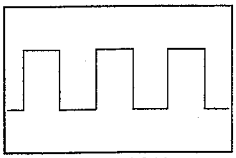
PB 1.8 Vp-p
0.1 V/5 msec/DIV

WF12 IC1-87



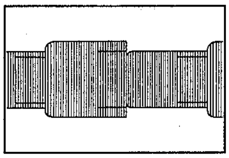
REC 1.6 Vp-p
50 mV/1 msec/DIV

WF13 TP111 D.FF



REC/PB 5.0 Vp-p
0.2 V/10 msec/DIV

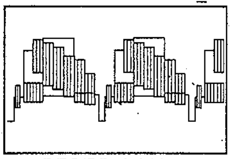
WF14 TP106 V.PB FM



PB 1.7 Vp-p
0.1 V/5 msec/DIV

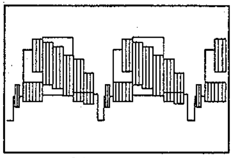
— ON SCREEN —

WF1 IC201-15 CV_IN



REC/PB 2.3 Vp-p
50 mV/20 µsec/DIV

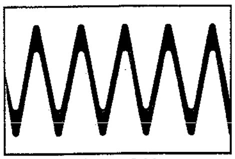
WF2 IC201-13 CVOUT



REC/PB 2.3 Vp-p
50 mV/20 µsec/DIV

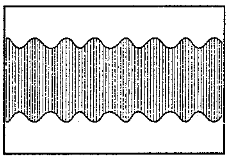
— FMA —

WF1 IC2201-9



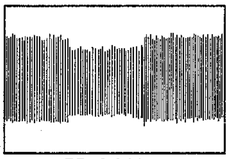
REC 0.12 Vp-p
2 mV/0.5 msec/DIV

WF2 IC2201-21



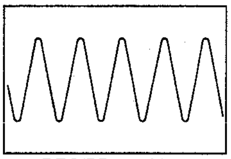
REC 1.1 Vp-p
20 mV/1 msec/DIV

WF3 IC2201-30



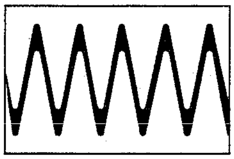
PB 0.8 Vp-p
20 mV/5 msec/DIV

WF4 IC2201-53



REC/PB 1.1 Vp-p
20 mV/0.5 msec/DIV

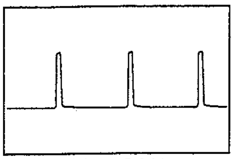
WF5 IC2201-61



REC 0.15 Vp-p
2 mV/0.5 msec/DIV

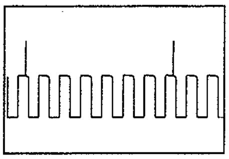
— SYSCON —

WF1 CN3001-4 D.PG



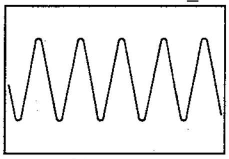
REC/PB 5.0 Vp-p
0.2 V/10 msec/DIV

WF2 CN3001-5 D.FG



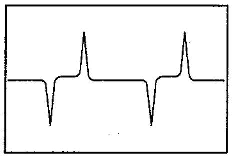
REC/PB 4.5 Vp-p
0.1 V/5 msec/DIV

WF3 CN3003-2 CAP_FG



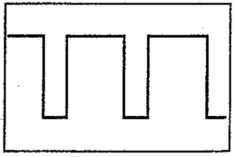
REC/PB 2.5 Vp-p
50 mV/0.5 msec/DIV

WF4 TP4001 CTL P



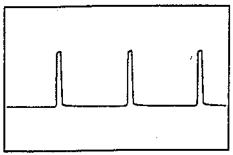
PB 2.0 Vp-p
50 mV/10 msec/DIV

WF5 IC3001-1 CTL(+)



REC 3.8 Vp-p
0.1 V/10 msec/DIV

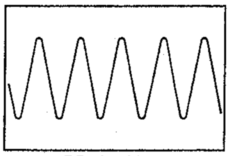
WF6 IC3001-98 C.SYNC



REC/PB 3.5 Vp-p
0.1 V/20 µsec/DIV

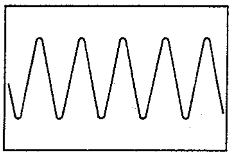
— VSC —

WF1 LPF2501-3



PB 0.4 Vp-p
10 mV/0.5 msec/DIV

WF2 IC2501-48



PB 0.7 Vp-p
10 mV/0.5 msec/DIV

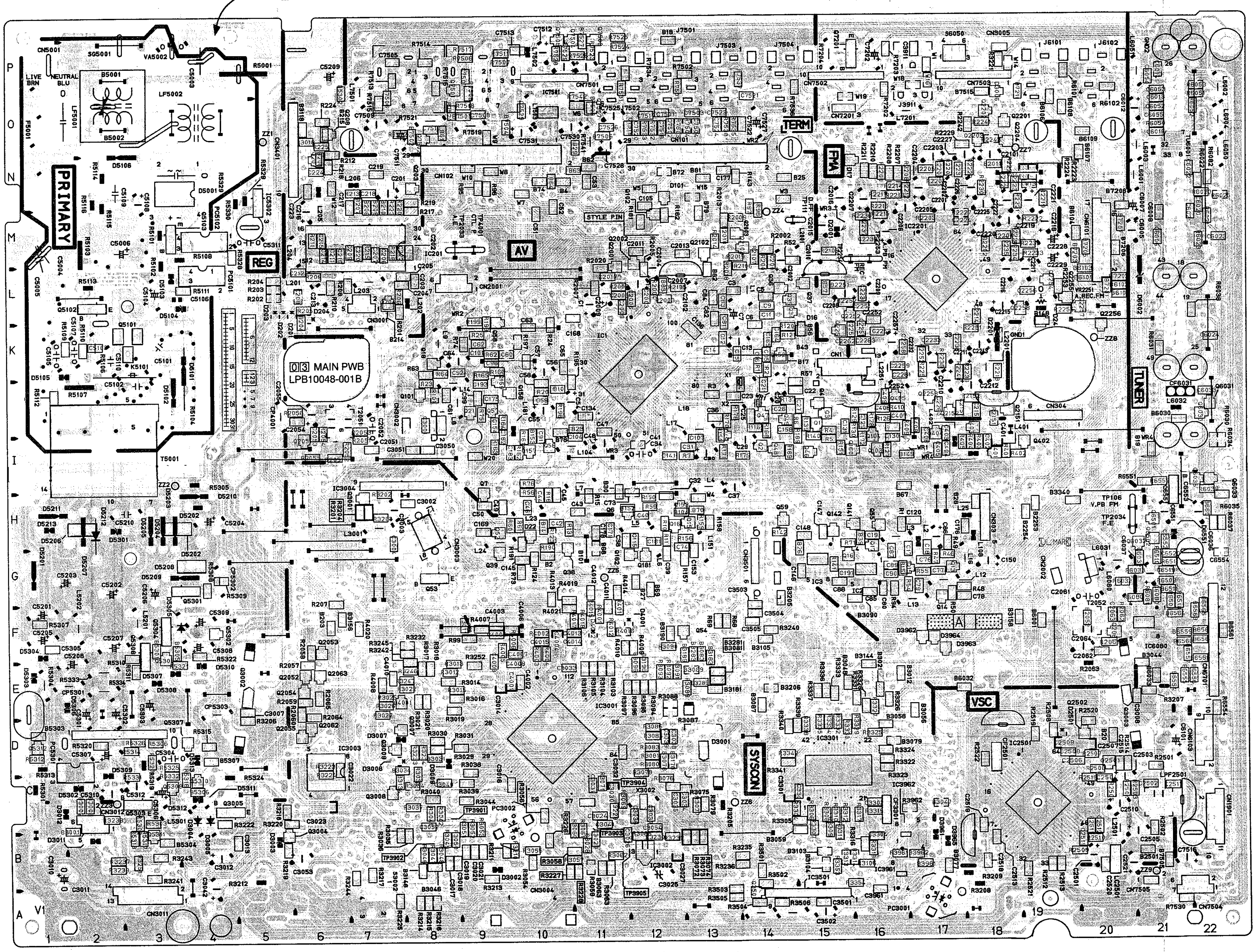
COMPONENT PARTS LOCATION GUIDE <MAIN>

REF.NO.	LOCATION		
CAPACITOR			
C1	A	D	11L
C3	B	C	13L
C5	B	C	14L
C6	B	C	14K
C7	A	D	13L
C9	B	C	14L
C11	B	C	14L
C12	B	C	13K
C13	A	D	13K
C14	B	C	13K
C15	B	C	13K
C16	B	C	14K
C17	B	C	17G
C18	B	C	17G
C19	B	C	16H
C20	A	D	14J
C21	B	C	14J
C22	B	C	15J
C23	B	C	13J
C24	B	C	14J
C25	B	C	14J
C26	B	C	14J
C27	B	C	15J
C29	A	D	14I
C30	A	D	13I
C31	B	C	13I
C32	B	C	12H
C34	A	D	12I
C36	B	C	13J
C37	A	D	13I
C38	B	C	11H
C39	B	C	12G
C40	B	C	12H
C41	B	C	12I
C42	B	C	10H
C43	B	C	11H
C44	B	C	10H
C45	B	C	10H
C46	B	C	10H
C47	B	C	11J
C48	A	D	11I
C49	B	C	9H
C50	B	C	9H
C51	B	C	10M
C52	B	C	10N
C53	B	C	11N
C54	A	D	11J
C55	A	D	10J
C56	A	D	10K
C57	B	C	10K
C58	B	C	10J
C59	B	C	10J
C60	B	C	9K
C61	B	C	8J
C62	B	C	9K
C63	B	C	10K
C64	A	D	8K
C65	B	C	10K
C73	B	C	12H
C74	B	C	12G
C76	B	C	17G
C77	B	C	17G
C78	B	C	18G
C79	B	C	17G
C80	B	C	16G
C81	B	C	13K
C82	B	C	13L
C83	B	C	13L
C84	B	C	13L
C85	B	C	16G
C86	A	D	17H
C87	B	C	16G
C88	B	C	15G
C89	B	C	16G
C90	B	C	16G
C91	B	C	10I
C92	B	C	9K
C95	B	C	14K
C98	B	C	9K
C99	B	C	9J
C101	B	C	9K
C104	B	C	11I
C105	B	C	12N
C107	B	C	13I
C115	B	C	12H
C120	B	C	17H
C129	B	C	16J
C130	B	C	16I
C131	B	C	15J
C134	B	C	11J
C136	B	C	13K
C141	B	C	12I
C145	B	C	10G
C146	B	C	15G
C147	B	C	15H
C148	B	C	15H
C150	A	D	18G
C153	B	C	13G
C154	B	C	9J
C158	B	C	14J
C164	B	C	14K
C165	B	C	14K
C168	B	C	11L
C169	B	C	9H
C171	B	C	11H
C175	B	C	9J
C176	B	C	18H
C177	B	C	13N
C178	B	C	11H
C181	B	C	12H
C182	B	C	9I
C183	B	C	9I
C191	B	C	15G
C193	B	C	9J
C201	A	D	7N
C202	B	C	8M
C203	B	C	8L
C204	B	C	8L
C205	B	C	8L
C206	B	C	7M
C207	B	C	7M
C208	B	C	6L
C209	B	C	7M
C210	B	C	6M
C211	B	C	6M
C212	B	C	6L
C213	A	D	6L
C214	B	C	6M
C215	B	C	6M
C216	A	D	6M
C217	B	C	7N
C218	B	C	7N
C219	B	C	7N
C220	B	C	7M
C222	B	C	8M
C223	B	C	6N
C224	B	C	6N
C401	B	C	18I
C402	B	C	18I
C403	B	C	17I
C404	B	C	17I
C405	B	C	17I
C406	B	C	17I
C407	B	C	16J
C408	B	C	16J
C409	B	C	16J
C2001	B	C	14M
C2002	A	D	14L
C2003	B	C	12L
C2004	A	D	12L
C2005	B	C	11L
C2006	B	C	12L
C2007	A	D	12L
C2008	B	C	11L
C2009	A	D	11L
C2010	A	D	15M
C2011	B	C	12M
C2013	B	C	13M
C2015	A	D	15M
C2016	A	D	15N
C2017	B	C	11L
C2051	B	C	7I
C2052	A	D	7I
C2053	B	C	6J
C2054	B	C	6J
C2055	A	D	6J
C2061	A	D	20G
C2062	B	C	20F
C2063	B	C	20F
C2064	A	D	20F
C2101	A	D	18N
C2102	A	D	13L
C2151	B	C	17J
C2152	B	C	18J
C2201	A	D	17M
C2202	A	D	17N
C2203	A	D	17N
C2204	A	D	17N
C2205	A	D	16M
C2206	A	D	16M
C2207	A	D	16N
C2208	A	D	16L
C2209	A	D	16L
C2210	A	D	17J
C2211	A	D	18K
C2212	A	D	18J
C2213	A	D	18K
C2214	B	C	18L
C2215	A	D	18L
C2216	A	D	18L
C2217	A	D	19L
C2218	A	D	19M
C2219	A	D	18M
C2220	A	D	18M
C2221	A	D	19N
C2222	A	D	18N
C2223	B	C	18N
C2224	B	C	17M
C2225	A	D	18N
C2226	A	D	18N
C2227	A	D	18N
C2228	A	D	19M
C2229	A	D	19M
C2230	B	C	16M
C2231	B	C	16L
C2232	A	D	17K
C2233	B	C	17K
C2234	B	C	17K
C2251	B	C	16L
C2252	B	C	16K
C2253	B	C	16K
C2254	B	C	16K
C2255	B	C	16K
C2256	B	C	19L
C2257	A	D	16K
C2258	B	C	16K
C2259	B	C	16K
C2260	B	C	17J
C2261	B	C	16K
C2262	B	C	15K
C2263	B	C	16K
C2501	A	D	20B
C2502	B	C	21C
C2503	A	D	20C
C2504	B	C	20C
C2505	A	D	20B
C2506	B	C	19D
C2507	B	C	20D
C2508	B	C	19D
C2509	B	C	19D
C2510	A	D	20C
C2511	B	C	20B
C2512	B	C	20B
C2513	B	C	18B
C2515	B	C	20D
C2517	B	C	21C
C2518	B	C	18B
C2519	B	C	18C
C2520	B	C	20B
C2521	A	D	20B
C3001	B	C	8J
C3002	B	C	8H
C3003	A	D	7H
C3004	B	C	7H
C3007	B	C	5E
C3008	B	C	21E
C3010	A	D	1B
C3011	A	D	1B
C3012	A	D	4B
C3013	B	C	5B
C3014	B	C	9E
C3016	B	C	9C
C3017	B	C	8B
C3018	B	C	8B
C3019	B	C	9B
C3020	B	C	9B
C3021	B	C	9B
C3022	B	C	6D
C3023	B	C	6C
C3024	B	C	11C
C3025	A	D	12B
C3026	B	C	11B
C3027	B	C	12B
C3028	B	C	11B
C3029	B	C	11B
C3030	B	C	11C
C3031	B	C	11C
C3032	B	C	11D
C3033	B	C	10E
C3034	B	C	12C
C3035	B	C	12C
C3036	B	C	12C
C3037	B	C	12C
C3038	B	C	12D
C3039	B	C	12D
C3040	B	C	8C
C3041	B	C	11C
C3042	A	D	4A
C3050	B	C	8I
C3051	B	C	8I
C3052	B	C	8C
C3053	A	D	6B
C3054	B	C	12C
C3301	B	C	14C
C3302	B	C	15C
C3303	B	C	16C
C3304	B	C	16B
C3501	B	C	15A
C3502	A	D	15A
C3503	B	C	14F
C3504	B	C	14F
C3505	B	C	14F
C3911	B	C	17P
C3961	B	C	16A
C4001	B	C	9E
C4002	B	C	10E
C4003	B	C	9F
C4004	B	C	10F
C4005	B	C	9F
C4006	B	C	9F
C4007	B	C	10F
C4008	B	C	9E
C4009	B	C	9E
C4010	B	C	7E
C4011	B	C	11F
C4012	B	C	11G
C4013	B	C	11F
C4014	B	C	11F
C4015	B	C	10F
C5001	A	D	2O
C5002	A	D	3N
C5003	A	D	4P
C5004	A	D	1M
C5005	A	D	1L
C5006	A	D	3M
C5101	A	D	3K
C5102	A	D	3J
C5103	B	C	2K
C5104	A	D	3L
C5105	A	D	1K
C5106	A	D	4L
C5107	A	D	2K
C5108	A	D	3N
C5109	A	D	2N
C5110	A	D	2K
C5201	A	D	1F
C5202	A	D	2G
C5203	A	D	1G
C5204	A	D	4H
C5205	A	D	1F
C5206	A	D	3G
C5207	A	D	3F
C5208	A	D	1E
C5209	A	D	6P
C5210	A	D	3H
C5301	A	D	2D
C5302	A	D	2D
C5303	A	D	3E
C5304	A	D	4D
C5305	B	C	1F
C5306	A	D	3C
C5307	A	D	2D
C5308	A	D	4F
C5309	A	D	4F
C5310	A	D	2C
C5311	A	D	5M
C5312	A	D	3C
C6005	A	D	20M
C6006	B	C	21M
C6007	A	D	21M
C6008	B	C	21M
C6012	A	D	21O
C6013	B	C	21O
C6014	B	C	21P
C6016	B	C	21O
C6020	B	C	22M
C6021	B	C	22M
C6022	B	C	21N
C6023	B	C	22M
C6024	B	C	22K
C6032	B	C	21G
C6033	B	C	22J
C6036	B	C	22H
C6037	A	D	21G
C6052	B	C	21O
C6053	B	C	21P
C6054	B	C	21P
C6055	B	C	21O
C6080	B	C	21G
C6101	A	D	21D
C6519	B	C	21G
C6520	B	C	21G
C6551	A	D	21H
C6552	B	C	21H
C6553	A	D	22H
C6554	B	C	22G
C7202	A	D	16P
C7501	B	C	12O
C7502	B	C	12O
C7503	B	C	13O
C7504	B	C	13O
C7505	B	C	7P
C7506	B	C	7O
C7507	B	C	9P
C7508	B	C	9O
C7509	A	D	7O
C7510	B	C	8O
C7511	A	D	8O
C7512	A	D	10P
C7513	B	C	10P
C7514	A	D	11P
C7515	A	D	11P
C7516	A	D	21B
C7517	B	C	12O
C7518	B	C	12O
C7519	B	C	12O
C7520	B	C	12O
C7521	B	C	14O
C7522	B	C	14O
C7523	B	C	13O
C7524	B	C	13O
C7525	A	D	11O
C7526	B	C	11O
C7527	A	D	14O
C7528	A	D	11O
C7529	B	C	10O
C7530	A	D	11O
C7531	A	D	10O
CONNECTOR			
CN1	A	D	15K
CN101	A	D	14O
CN102	A	D	10O
CN303	A	D	18H
CN304	A	D	20J
CN1901	A	D	22C
CN2001	A	D	9L
CN2002	A	D	20G
CN3001	A	D	7L
CN3002	A	D	8J
CN3003	A	D	8H
CN3004	A	D	10A
CN3005	A	D	18P
CN3011	A	D	3A
CN3012	A	D	2C
CN3401	A	D	6O
CN3501	A	D	14H
CN5001	A	D	1P
CN6101	A	D	20L
CN6103	A	D	22D
CN6701	A	D	22E
CN7201	A	D	15O
CN7501	A	D	11P
CN7502	A	D	16P
CN7503	A	D	18P
CN7504	A	D	22A
CN7505	A	D	21B
DIODE			
D16	B	C	15K
D17	B	C	16N
D22	B	C	10H
D24	B	C	19K
D101	B	C	12N
D201	B	C	6L
D202	B	C	5L
D203	B	C	5L
D204	B	C	6L
D2001	A	D	15M
D2201	A	D	18K
D2501	B	C	19D
D3001	A	D	13D
D3002	A	D	9B
D3003	A	D	5B
D3004	A	D	4C
D3005	A	D	4C
D3006	B	C	18P
D3007	A	D	8D
D3008	B	C	7D
D3009	A	D	8D
D3011	A	D	2B
D3012	A	D	1C
D3961	A	D	17C
D3962	B	C	17F
D3963	B	C	17F
D3964	B	C	17F
D3965	A	D	17B
D4001	B	C	12F
D4002	B	C	11F
D5001	B	C	3N
D5101	A	D	4J
D5102	A	D	3K
D5103	A	D	3L
D5104	A	D	3L
D5105	A	D	2K
D5106	A	D	3N
D5201	A	D	1G
D5202	A	D	4H
D5203	A	D	3H
D5204	A	D	3H
D5205	A	D	3H
D5206	A	D	2H
D5207	A	D	2H
D5208	A	D	4G
D5209	A	D	4G
D5210	A	D	3H
D5211	A	D	1H
D5212	A	D	2H
D5213	A	D	1H
D5301	A	D	2H
D5302	A	D	2C
D5303	A	D	1E
D5304	A	D	1F
D5305	A	D	4F
D5306	A	D	2E
D5307	A	D	3E
D5308	A	D	3E
D5309	A	D	2D
D5310	A	D	4E
D5311	A	D	4C
D5312	B	C	3C
D5313	A	D	4D
D6002	A	D	21M
D6551	A	D	21G
IC			
IC1	B	C	12K
IC2	B	C	16G
IC3	B	C	15G
IC201	A	D	8L
IC2201	B	C	17L
IC2501	B	C	19C
IC3001	B	C	10D
IC3002	B	C	12B
IC3003	A	D	6C
IC3004	A	D	8I
IC3301	B	C	15D
IC3501	A	D	15A
IC3961	B	C	16B
IC3962	B	C	16B
IC5301	A	D	2D
IC5302	A	D	5N
IC6080	B	C	21F
IC7501	B	C	10O
JACK			
J3911	A	D	17P
J3951	A	D	19K
J3952	A	D	6K
J6101	A	D	19P
J6102	A	D	20P
J7201	A	D	6K
J7501	A	D	12P
J7502	A	D	11P
J7503	A	D	13P
J7504	A	D	14P
J7505	A	D	8P
J7506	A	D	9P
COIL			
L1	A	D	14L
L2	A	D	17G
L3	A	D	16H
L4	A	D	13I
L5	A	D	12H
L6	A	D	12G
L7	A	D	11I
L8	A	D	9J
L9	A	D	8K
L12	A	D	17G
L13	A	D	17G
L14	A	D	9J
L16	A	D	18G
L17	A	D	13J
L18	A	D	13J
L23	A	D	10H
L24	A	D	9H
L25	A	D	18H
L104	A	D	11I
L108	A	D	18G
L151	A	D	13G
L181	A	D	10I
L201	A	D	6L
L202	A	D	8L
L203	A	D	7L
L204	A	D	6M
L205	A	D	6N
L206	A	D	7N
L401	A	D	18I
L402	A	D	17I
L2001	A	D	15L
L2201	A	D	18K
L2251	A	D	16K
L2252	A	D	17J
L2501	A	D	20C
L3001	A	D	7H
L3501	A	D	14A
L5201	A	D	3F
L5202	A	D	2F
L5301	A	D	4C
L6001	A	D	21N
L6002	A	D	22P
L6003	A	D	21O
L6004	A	D	22O
L6031	A	D	20G
L6032	A	D	21J
L6050	A	D	22O
L6051	A	D	21P
L6080	A	D	20G
L7201	A	D	16O
L7501	A	D	7P
L7502	A	D	10P
L7503	A	D	10O
LC2501	A	D	20B
TRANSISTOR			
Q1	B	C	15J
Q2	B	C	14I
Q3	B	C	15J
Q4	B	C	15J
Q6	B	C	12H
Q7	B	C	9H
Q13	B	C	17G
Q14	B	C	17G
Q15	B	C	17G
Q16	B	C	15G
Q17	B	C	16G
Q18	B	C	8K
Q21	B	C	9J
Q34	B	C	14L
Q35	B	C	14L
Q36	B	C	14L
Q37	B	C	15L
Q38	B	C	10G
Q39	B	C	9G
Q45	B	C	14J
Q46	B	C	15I
Q47	B	C	14J
Q48	B	C	14I
Q49	B	C	13I
Q52	B	C	9H
Q53	A	D	8G
Q54	B	C	13F
Q55	B	C	16H
Q56	B	C	10I
Q57	B	C	9J
Q58	B	C	9K
Q59	B	C	14H
Q101	B	C	8J
Q102	B	C	12M
Q103	B	C	16I
Q104	B	C	16I
Q141	B	C	16H
Q142	B	C	15H
Q152	B	C	14K
Q153	B	C	12H
Q154	B	C	13H
Q157	B	C	10I
Q158	B	C	9J
Q159	B	C	9J
Q160	B	C	16I
Q161	B	C	12H
Q181	B	C	12G
Q182	B	C	12G
Q203	B	C	8N
Q204	B	C	7L
Q207	B	C	6N
Q208	B	C	6O
Q401	B	C	18I
Q402	B	C	19I
Q403	B	C	18J
Q404	B	C	17I
Q405	B	C	16J
Q2001	B	C	11L
Q2002	B	C	12M
Q2003	B	C	14M
Q2051	B	C	6I
Q2052	B	C	6E
Q2053	B	C	6F
Q2054	B	C	6E
Q2055	B	C	6D
Q2061	B	C	20F
Q2062	B	C	6D
Q2063	B	C	6E
Q2102	B	C	13M
Q2103	B	C	14M
Q2151	B	C	18J
Q2152	B	C	17J
Q2201	B	C	18O
Q2202	B	C	18O
Q2203	B	C	18O
Q2204	B	C	18O
Q2251	B	C	15K
Q2252	B	C	16L
Q2253	B	C	17J
Q2254	B	C	19L
Q2255	B	C	19L
Q2256	B	C	20K
Q2257	B	C	20L
Q2258	B	C	19L
Q2501	B	C	20D
Q2502	B	C	20D
Q3001	B	C	7H
Q3002	A	D	5E
Q3003	A	D	20E
Q3004	B	C	5B
Q3005	A	D	5C
Q3007	B	C	7D
Q3008	B	C	7C
Q3009	B	C	7D
Q3501	B	C	14A
Q4001	B	C	7E
Q5101	A	D	2K
Q5102	A	D	2L
Q5103	A	D	3M
Q5301	A	D	3G
Q5302	B	C	4F
Q5303	A	D	3C
Q5304	A	D	3F
Q5305	B	C	3F
Q5306	A	D	3F
Q5307	B	C	4D
Q5308	B	C	3C
Q5310	B	C	4C
Q5311	B	C	3B
Q5312	B	C	1D
Q6030	B	C	22J
Q6031	B	C	22J
Q6032	B	C	21G
Q6033	B	C	22I
Q6035	B	C	22I
Q6501	B	C	21H
Q6502	B	C	21H
Q6551	A	D	21H
Q7201	A	D	16P
Q7501	B	C	8P
Q7502	B	C	8O
Q7503	B	C	11P
Q7504	B	C	11P
Q7505	B	C	10P
Q7507	B	C	11O
RESISTOR			
R1	B	C	16H
R2	B	C	14K
R3	B	C	13J
R4	B	C	15J
R5	B	C	15I
R6	B	C	15J
R7	B	C	13I
R10	B	C	12H
R11	B	C	12H
R13	B	C	10H
R15	B	C	11H
R16	B	C	10H
R20	B	C	10J
R23	B	C	8J
R24	B	C	10K
R25	B	C	9K
R46	B	C	17G
R47	B	C	17G
R48	B	C	18G
R49	B	C	17H
R50	B	C	17G
R52	B	C	14M
R54	B	C	17G
R55	B	C	17G
R56	B	C	10H
R57	B	C	15J
R59	B	C	12H
R60	B	C	9H
R61	B	C	10H
R62	B	C	9K
R63	B	C	8K
R64	B	C	8K
R68	B	C	13F
R69	B	C	13F
R71	B	C	15H
R73	B	C	10G
R74	B	C	9K
R75	B	C	9J
R76	B	C	10I
R94	B	C	16G
R95	B	C	9N
R96	B	C	9N
R97	B	C	14N
R98	B	C	14M
R99	B	C	9F
R101	B	C	8J
R112	B	C	14K
R116	B	C	14J
R120	B	C	14K
R121	B	C	14K
R123	B	C	10H
R124	B	C	10G
R126	B	C	16J
R127	B	C	16I
R128	B	C	16J
R129	B	C	16J
R130	B	C	16J
R137	B	C	14J
R139	B	C	15J
R140	B	C	15I
R141	B	C	15G
R142	B	C	14H
R143	B	C	13N
R150	B	C	12H
R151	B	C	15I
R156	B	C	13H
R157	B	C	13G
R158	B	C	13H
R159	B	C	13H
R161	B	C	10I
R162	B	C	10I
R163	B	C	9I
R164	B	C	9J
R165	B	C	9K
R166	B	C	9K
R168	B	C	14J
R169	B	C	14I
R170	B	C	13J
R171	B	C	13I
R172	B	C	16I
R178	B	C	13J
R179	B	C	14I
R181	B	C	12M
R182	B	C	12M
R189	B	C	15I
R190	B	C	10G
R191	B	C	10H
R195	B	C	11J
R196	B	C	10J
R197	B	C	10K
R198	B	C	9K
R199	B	C	9L
R201	B	C	7L
R202	B	C	5L
R203	B	C	5L
R204	B	C	5L
R205	B	C	6L
R206	B	C	7L
R207	B	C	6G
R208	B	C	7L
R209	B	C	6L
R210	B	C	6L
R211	B	C	6M
R212	B	C	6N
R213	B	C	7N
R215	B	C	7M
R216	B	C	7M
R217	B	C	8M
R218	B	C	6N
R219	B	C	8N
R220	B	C	7N
R223	B	C	7N
R224	B	C	6O
R225	B	C	6O
R401	B	C	18I
R402	B	C	18I
R403	B	C	18I
R404	B	C	18I
R405	B	C	17I
R408	B	C	17J
R409	B	C	17J
R410	B	C	16J
R2001	B	C	14M
R2002	B	C	14M
R2003	B	C	12L
R2004	B	C	12L
R2005	B	C	12L
R2006	B	C	11L
R2007	B	C	11L
R2009	B	C	13M
R2010	B	C	13M
R2013	B	C	13M
R2014	B	C	13M
R2018	B	C	13L
R2019	B	C	13M
R2020	B	C	11L
R2051	B	C	7I
R2052	B	C	7I
R2053	B	C	7J
R2054	B	C	6J
R2055	B	C	6I
R2056	B	C	6J
R2057	B	C	6E
R2058	B	C	6F
R2059	B	C	6E
R2060	B	C	6E
R2061	B	C	20F
R2062	B	C	20F
R2063	A	D	20E
R2064	B	C	6E
R2065	B	C	6E
R2105	B	C	12L
R2106	B	C	14L
R2107	B	C	14M
R2108	B	C	15M
R2151	B	C	18J
R2152	B	C	18J
R2201	B	C	17N
R2202	B	C	17N
R2203	B	C	17M
R2204	B	C	17N
R2205	B	C	17N
R2206	B	C	17N
R2207	B	C	16N
R2208	B	C	16N
R2209	B	C	16N
R2210	B	C	16N
R2211	B	C	16N
R2212	B	C	17N
R2213	B	C	16N
R2214	B	C	16N
R2215	B	C	16M
R2216	B	C	16N
R2217	B	C	16N
R2218	B	C	18K
R2219	B	C	19N
R2220	B	C	18M
R2221	B	C	18N
R2222	B	C	19M
R2223	B	C	19N
R2224	B	C	19N
R2225	B	C	18N
R2226	B	C	18N
R2227	B	C	17M
R2228	B	C	18N
R2229	B	C	18O
R2230	B	C	18N
R2231	B	C	17N
R2232	B	C	19M
R2233	B	C	19M
R2234	B	C	18M
R2235	B	C	18M
R2236	B	C	16M
R2237	B	C	16M
R2238	B	C	17K
R2239	B	C	18K
R2240	B	C	17K
R2241	B	C	18O
R2242	B	C	18O
R2243	B	C	18O
R2244	B	C	18K
R2251	B	C	18K
R2252	B	C	17K
R2253	B	C	19L
R2254	B	C	17K
R2255	B	C	19L
R2501	B	C	21D
R2502	B	C	21B
R2503	B	C	20C
R2504	B	C	20C
R2505	B	C	20C
R2506	B	C	20C
R2507	B	C	20D
R2508	B	C	19D
R2509	B	C	19B
R2510	B	C	20B
R2511	B	C	20B
R2512	B	C	19B
R2513	B	C	19B
R2514	B	C	20D
R2515	B	C	20C
R2519	B	C	19D
R2520	B	C	20D
R2521	B	C	19B
R2522	B	C	18D
R3011	B	C	9F
R3012	B	C	8E
R3013	B	C	8E
R3014	B	C	8E
R3015	B	C	8E
R3016	B	C	8E
R3017	B	C	8E
R3018	B	C	8E
R3019	B	C	8E
R3020	B	C	8E
R3021	B	C	8E
R3022	B	C	8E
R3025	B	C	7E
R3026	B	C	7E
R3027	B	C	7E
R3029	B	C	9D
R3030	B	C	8D
R3031	B	C	8D
R3033	B	C	8C
R3034	B	C	8C
R3035	B	C	7B
R3036	B	C	8B
R3037	B	C	8C
R3038	B	C	9D
R3039	B	C	9C
R3040	B	C	8C
R3041	B	C	8C
R3042	B	C	8C
R3044	B	C	9C
R3046	B	C	8B
R3047	B	C	8B
R3048	B	C	8B
R3049	B	C	8B
R3050	B	C	8B
R3051	B	C	9C
R3052	B	C	9C
R3053	B	C	9C
R3054	B	C	10B
R3055	B	C	10B
R3056	B	C	10C
R3057	B	C	11B
R3058	B	C	11B
R3059	B	C	11B
R3060	B	C	11B
R3061	B	C	11B
R3062	B	C	11B
R3063	B	C	11B
R3066	B	C	12B
R3069	B	C	11C
R3071	B	C	11C
R3072	B	C	13B
R3073	B	C	13B
R3074	B	C	13B
R3075	B	C	12C
R3076	B	C	12C
R3077	B	C	13C
R3078	B	C	12C
R3079	B	C	13C
R3080	B	C	12D
R3081	B	C	12D
R3083	B	C	12D
R3085	B	C	12D
R3086	B	C	12D
R3087	B	C	12E
R3088	B	C	12E
R3089	B	C	13E
R3090	B	C	12F
R3091	B	C	12E
R3092	B	C	12E
R3093	B	C	12E
R3094	B	C	12E
R3095	B	C	12E
R3096	B	C	12E
R3097	B	C	11E
R3103	B	C	11E
R3104	B	C	11E
R3105	B	C	11E
R3106	B	C	11E
R3201	B	C	7H
R3202	B	C	7H
R3203	B	C	7H
R3204	B	C	7H
R3205	A	D	13C
R3206	B	C	5D
R3207	B	C	21E
R3208	A	D	18A
R3209	A	D	18B
R3210	B	C	9B
R3211	B	C	9B
R3212	A	D	5B
R3213	B	C	9B
R3214	B	C	8A
R3215	B	C	8A
R3216	B	C	8A
R3217	B	C	7B
R3218	B	C	5C
R3219	B	C	5B
R3220	B	C	5C
R3221	B	C	18P
R3222	B	C	4C
R3223	B	C	6D
R3224	B	C	6C
R3225	B	C	7A
R3226	B	C	10B
R3227	B	C	10B
R3228	B	C	11B
R3229	B	C	11C
R3230	B	C	12B
R3231	B	C	12B
R3232	B	C	8F
R3233	B	C	8D
R3234	B	C	8D
R3235	B	C	14B
R3236	B	C	14B
R3237	B	C	2B
R3238	B	C	2C
R3239	B	C	2B
R3240	B	C	14F
R3241	B	C	3B
R3242	B	C	8E
R3243	B	C	3B
R3244	B	C	7B
R3245	B	C	8F
R3246	B	C	8E
R3247	B	C	8E
R3251	B	C	3B
R3252	B	C	9E
R3304	B	C	14C
R3305	B	C	15C
R3306	B	C	15C
R3307	B	C	15B
R3308	B	C	15C
R3309	B	C	15B
R3310	B	C	15C
R3311	B	C	15B
R3312	B	C	15C
R3313	B	C	15B
R3314	B	C	16B
R3316	B	C	16B
R3317	B	C	16C
R3318	B	C	16B
R3319	B	C	16C
R3322	B	C	16D
R3323	B	C	16D
R3324	B	C	16D
R3325	B	C	16D
R3326	B	C	16E
R3327	B	C	16E
R3328	B	C	16E
R3329	B	C	16D
R3330	B	C	15D
R3331	B	C	16E
R3332	B	C	15D
R3333	B	C	15E
R3334	B	C	15D
R3335	B	C	15D
R3336	B	C	15E
R3337	B	C	15E
R3338	B	C	15D
R3339	B	C	15D
R3340	B	C	14D
R3341	B	C	14D
R3342	B	C	14D
R3353	B	C	15B
R3354	B	C	16B
R3501	B	C	14B
R3502	B	C	14B
R3503	B	C	13A
R3504	B	C	14A
R3505	B	C	13A
R3506	B	C	14A
R3961	B	C	16B
R3962	B	C	17C
R4001	B	C	11F
R4002	B	C	10F
R4003	B	C	10F
R4004	B	C	10F
R4005	B	C	9F
R4006	B	C	9F
R4007	B	C	9F
R4008	B	C	7E
R4009	B	C	12F
R4010	B	C	11F
R4011	B	C	11F
R4012	B	C	11F
R4013	B	C	10G
R4014	B	C	11G
R4015	B	C	11F
R4016	B	C	11F
R4017	B	C	11F
R4018	B	C	11F
R4019	B	C	10G
R4020	B	C	7F
R4021	B	C	10F
R5001	A	D	5P
R5101	A	D	3M
R5102	A	D	3L
R5103	A	D	2M
R5104	A	D	4J
R5105	A	D	3K
R5106	A	D	2K
R5107	A	D	2J
R5108	A	D	4M
R5109	B	C	2K
R5110	B	C	2K
R5111	B	C	4L
R5112	B	C	1J
R5113	A	D	2L
R5114	A	D	2N
R5115	A	D	2M
R5116	A	D	2M
R5301	A	D	1C
R5302	B	C	3C
R5303	B	C	3C
R5304	A	D	1E
R5305	A	D	4I
R5306	B	C	3D
R5307	B	C	1F
R5308	B	C	4G
R5309	B	C	4G
R5310	B	C	3F
R5311	B	C	3E
R5312	B	C	1D
R5313	A	D	1D
R5314	B	C	3D
R5315	B	C	4D
R5316	B	C	4C
R5317	B	C	3B
R5318	B	C	3B
R5319	A	D	3D
R5320	B	C	2D
R5321	B	C	4E
R5322	B	C	4F
R5323	A	D	4H
R5324	A	D	5C
R5325	B	C	3D
R5326	B	C	3D
R5327	B	C	3D
R5328	B	C	5M
R5329	A	D	5N
R5330	A	D	5M
R5331	B	C	3C
R5332	B	C	3C
R5333	A	D	2E
R5334	A	D	2E
R6020	B	C	22N
R6021	B	C	22M
R6022	B	C	22N
R6023	B	C	22M
R6025	B	C	22N
R6030	B	C	22I
R6031	B	C	21K
R6032	B	C	20G
R6033	B	C	21G
R6034	B	C	22I
R6035	B	C	22H
R6037	B	C	22H
R6038	B	C	22L
R6039	B	C	22H
R6050	B	C	21O
R6051	B	C	22O
R6052	B	C	22O
R6053	B	C	22P
R6080	B	C	21G
R6081	B	C	21G
R6082	B	C	22N
R6101	B	C	19P
R6102	B	C	20P
R6508	B	C	21F
R6509	B	C	21G
R6510	B	C	21F
R6511	B	C	21G
R6551	B	C	21I
R6552	B	C	21I
R6553	A	D	21D
R6554	B	C	22E
R7202	B	C	16P
R7203	B	C	16P
R7204	A	D	15P
R7211	B	C	6K
R7501	B	C	12P
R7502	B	C	13P
R7503	B	C	12O
R7504	B	C	13O
R7506	B	C	9P
R7507	B	C	9P
R7509	B	C	9P
R7511	B	C	9P
R7513	B	C	7P
R7514	B	C	8P
R7515	B	C	7O
R7516	B	C	8P
R7517	B	C	9P
R7518	B	C	9O
R7519	A	D	9O
R7520	B	C	8O
R7521	A	D	8O
R7522	B	C	8O
R7523	B	C	11P
R7524	B	C	11P
R7525	B	C	11Q
R7526	B	C	11P
R7527	B	C	11P
R7528	B	C	10P
R7529	B	C	10P
R7530	B	C	21A
R7531	B	C	11P
R7532	B	C	12O
R7533	B	C	12O
R7534	B	C	12P
R7535	B	C	13O
R7536	B	C	15P
R7537	B	C	14P
R7538	B	C	13O
R7541	A	D	11O
R7542	B	C	11O
TEST POINT			
TP106	A	D	21H
TP111	A	D	15M
TP2033	A	D	8M
TP2034	A	D	21H
TP2253	A	D	16L
TP2254	A	D	16L
TP3901	B	C	8C
TP3902	B	C	8B
TP3903	B	C	11C
TP3904	B	C	11C
TP3905	B	C	12B
TP4001	A	D	9M
OTHER			
CF2501	A	D	18D
CF3301	A	D	16C
CF6031	A	D	21J
CP3501	A	D	14A
CP4001	A	D	5J
CP5301	A	D	1E
CP5302	A	D	4G
CP5303	A	D	4E
F5001	A	D	1P
GND1	A	D	19K
GND2	A	D	21P
K5101	A	D	3K
LF5001	A	D	2P
LF5002	A	D	4O
LPF2501	A	D	21C
PC3001	A	D	17A
PC3002	A	D	9C
PC5101	A	D	4L
PC5102	A	D	4M
PC5301	A	D	2D
S3002	A	D	7A
S6050	A	D	17P
SG5001	A	D	3P
T2051	A	D	6J
T2052	A	D	20F
T5001	A	D	1J
TU6001	A	D	21P
VA5001	A	D	2O
VA5002	A	D	4P
VR2251	A	D	19L
WR1	A	D	16I
WR2	A	D	14O
WR3	A	D	11I
WR4	A	D	21I
X1	A	D	14J
X2	A	D	14J
X3001	A	D	11C
X3002	A	D	12C

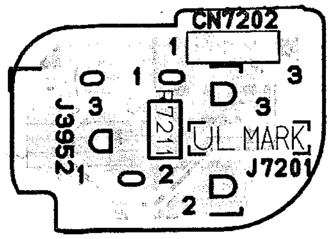
4.11 MAIN, A/C HEAD, JLIP, LANC/C.BOX AND LOADING MOTOR CIRCUIT BOARDS

CAUTION:
FOR CONTINUED PROTECTION AGAINST
FIRE HAZARD, REPLACE ONLY WITH SAME
TYPE AND RATED FUSE(S).

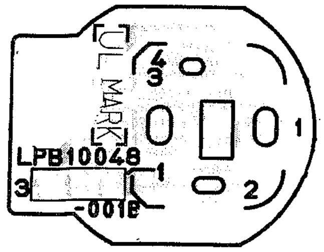
ATTENTION:
POUR UNE PROTECTION PERMANENTE
CONTRE LES RISQUE D'INCENDE,
REMPLACER LES FUSIBLES PAR UN AUTRE
DE MEME TYPE ET DE MEME TENSION.


DANGEROUS VOLTAGE
PRIMARY
REG
AV
TERM
FMA
TUNER
VSC
SYSCON
03 MAIN PWB
LPB10048-001B
STYLE PIN
LIVE BRN
NEUTRAL BLU

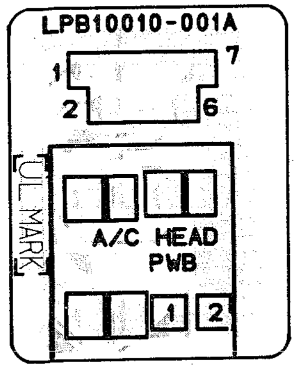
— LANC/C.BOX —


CN7202
J3952
J7201
UL MARK

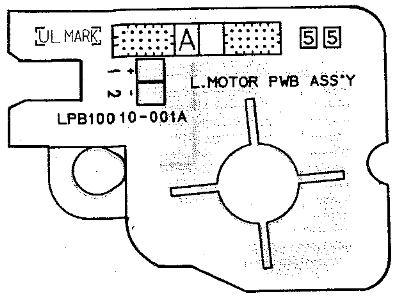
— JLIP —


UL MARK
LPB10048
-001B

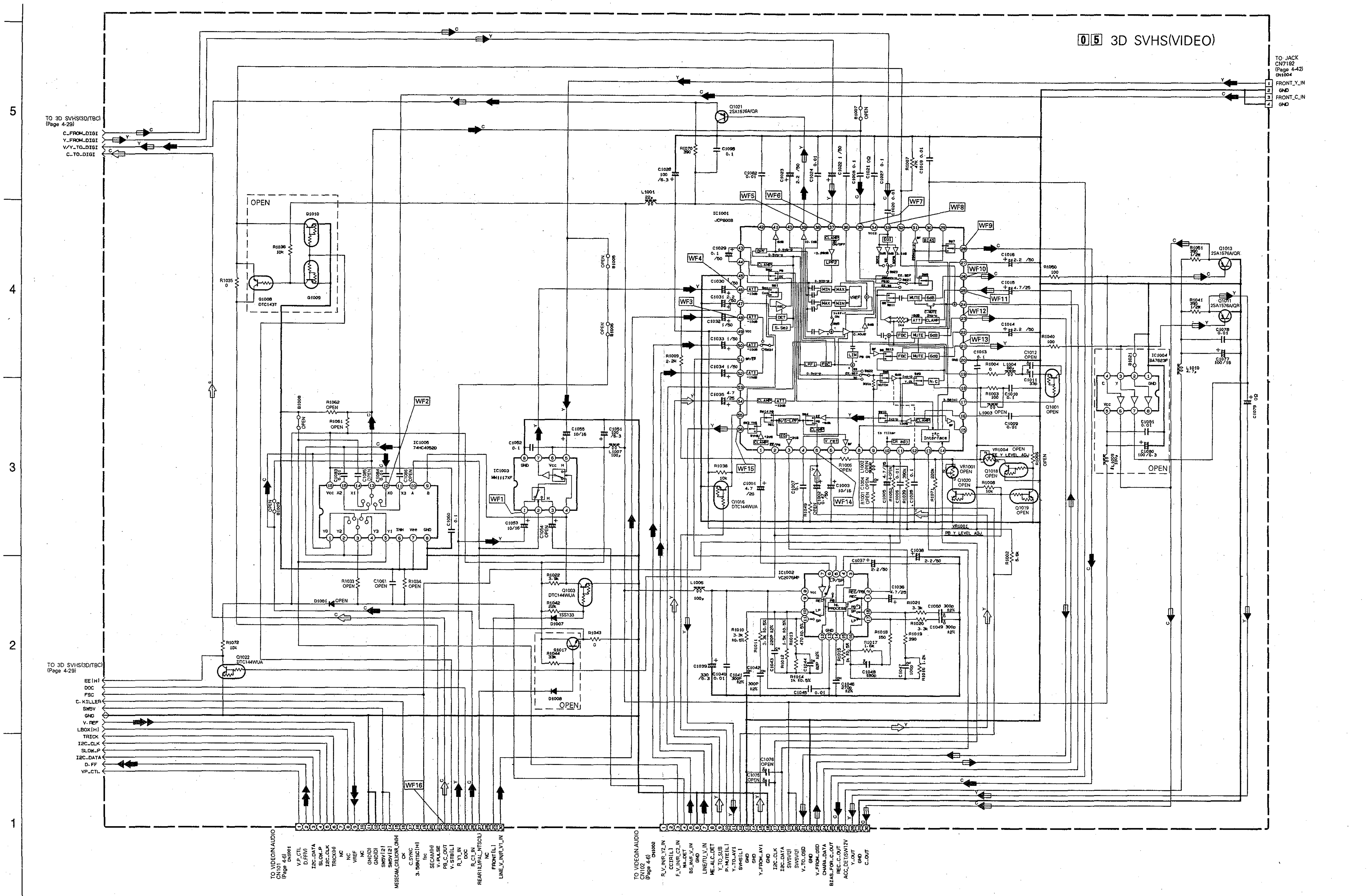
— A/C HEAD —


LPB10010-001A
UL MARK
A/C HEAD
PWB

— LOADING MOTOR —

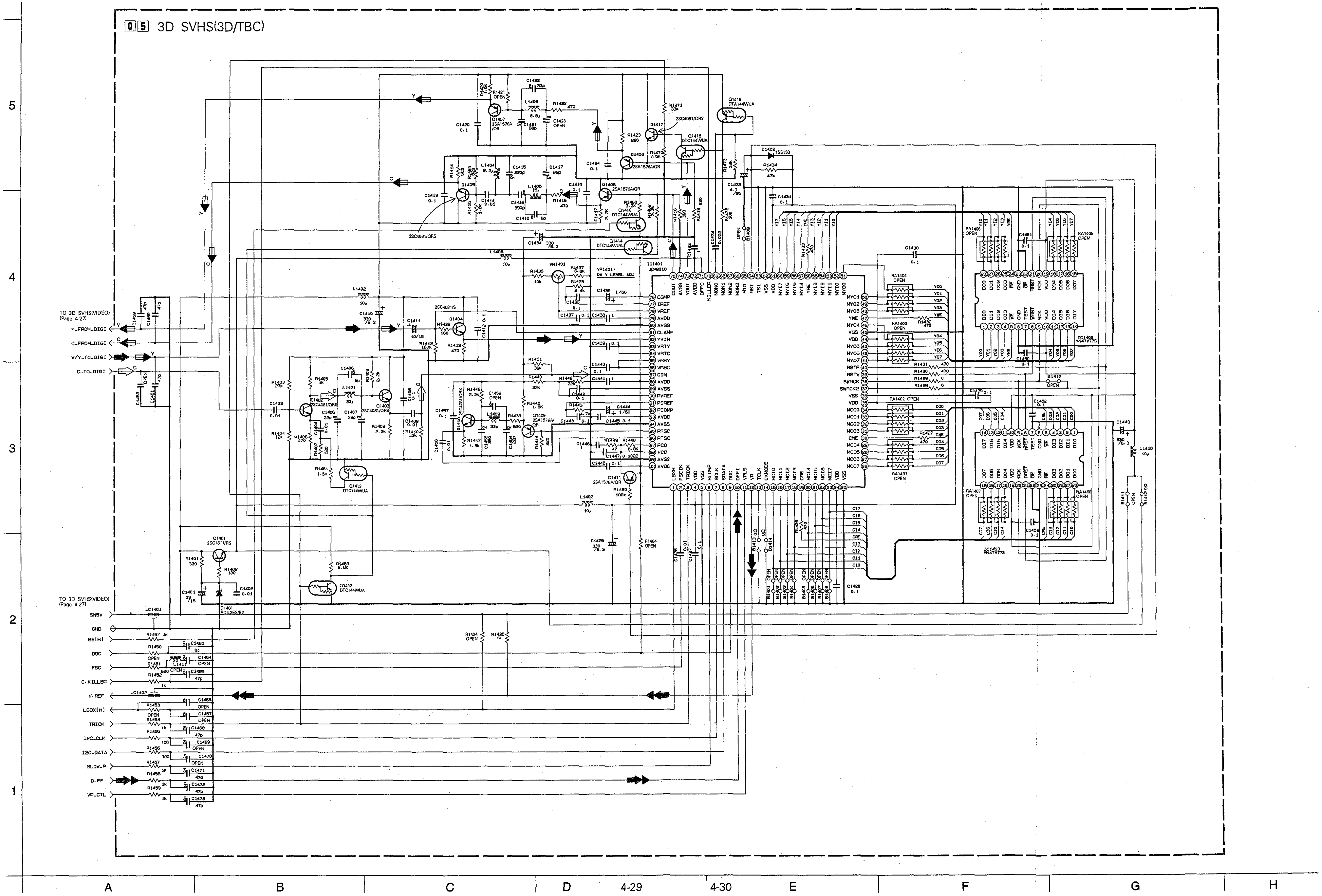

UL MARK
L.MOTOR PWB ASS'Y
LPB10010-001A

4.12 3D SVHS(VIDEO) SCHEMATIC DIAGRAM


05 3D SVHS(VIDEO)
TO 3D SVHS(3D/TBC)
(Page 4-29)
C_FROM_DIGI
Y_FROM_DIGI
V/Y_TO_DIGI
C_TO_DIGI
TO JACK
CN7192
(Page 4-42)
CN1004
FRONT_Y_IN
GND
FRONT_C_IN
GND
Q1021 2SA1576A/QR
IC1001 JCP8008
IC1002 VC2076HP
IC1003 MM1117XF
IC1004 BA7623F
IC1006 74HC4052D
OPEN
Q1008 DTC143T
Q1009
Q1010
Q1022 DTC144WUA
Q1003 DTC144WUA
Q1016 DTC144WUA
Q1017
Q1013 2SA1576A/QR
Q1011 2SA1576A/QR
VR1001 PB Y LEVEL ADJ
VR1004 OPEN EE Y LEVEL ADJ
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF12
WF13
WF14
WF15
WF16
TO 3D SVHS(3D/TBC)
(Page 4-29)
EE[H]
DOC
FSC
C.KILLER
SW5V
GND
V.REF
LBOX[H]
TRICK
I2C_CLK
SLOW_P
I2C_DATA
D.FF
VP_CTL
TO VIDEO/N.AUDIO
CN101
(Page 4-6)
CN1001
V.P_CTL
D.FF(V)
I2C_DATA
SLOW_P
I2C_CLK
TRICK(H)
NC
NC
VREF
NC
GND(D)
GND(D)
SW5V[2]
SW5V[2]
MESECAM_CK(L)/CNR_ON(H)
CK
C.SYNC
3.58NTSC[H]
fsc
SECAM(H)
V.PULSE
PB_C_OUT
V.STB[L]
R_Y1_IN
DOC
R_C1_IN
REAR1(L)/PAL_NTSC(L)
NC
FRONT[L]
LINE_V_IN/R_V1_IN
TO VIDEO/N.AUDIO
CN102
(Page 4-6)
CN1002
R_V_IN/R_Y2_IN
CCIR[L]
F_V_IN/R_C2_IN
WA_DET
BS_IN/F_V_IN
GND
LINE/TU_V_IN
ME_ALC_DET
Y_TO_SUB
P.MUTE[L]
Y_TO_AV1
SVHS[L]
GND
GND
Y_FROM_AV1
GND
I2C_CLK
I2C_DATA
SW5V(2)
SW5V(2)
V_TO_OSD
GND
V_FROM_OSD
CHARA_DATA
BIAS_FOR_C_OUT
REC_C_OUT
ACC_DET/SW12V
Y_OUT
GND
C_OUT
1
2
3
4
5
A
B
C
D
E
F
G
H

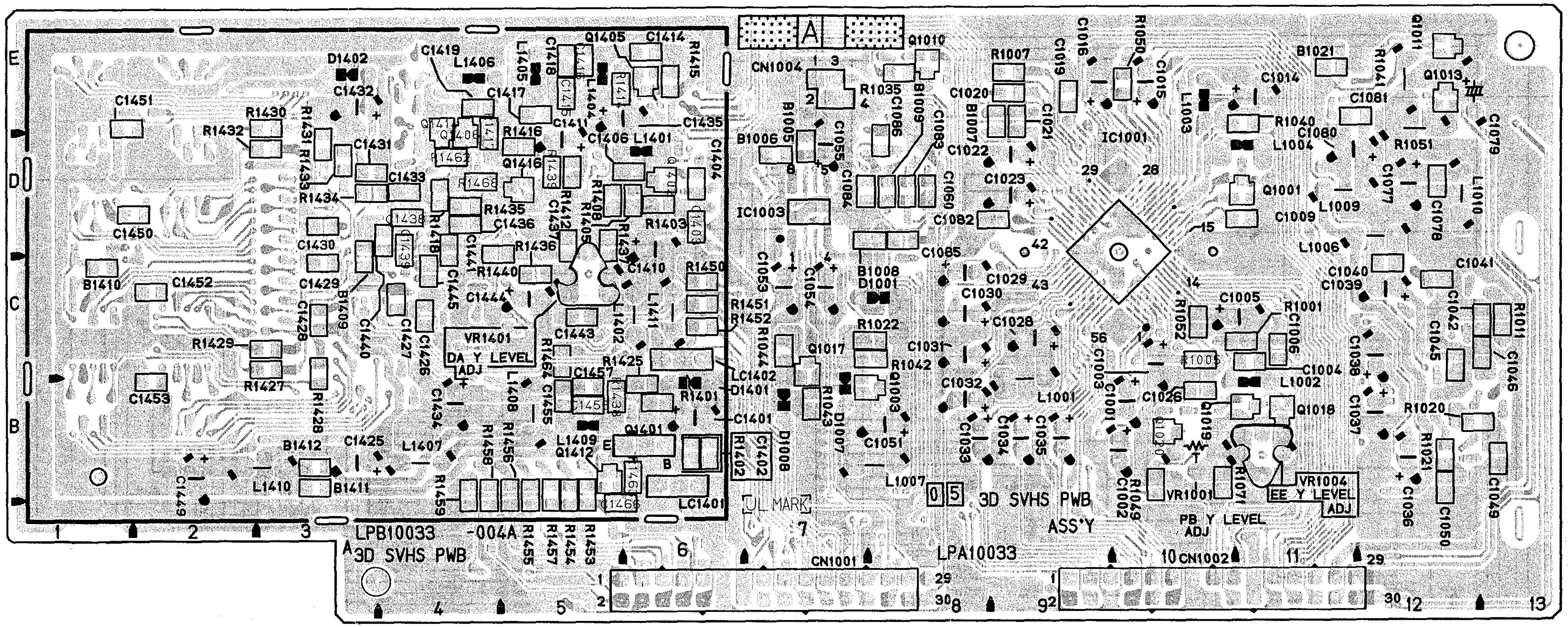
NOTE : For VIDEO waveforms, please refer to page 4-34.

4.13 3D SVHS(3D/TBC) SCHEMATIC DIAGRAM

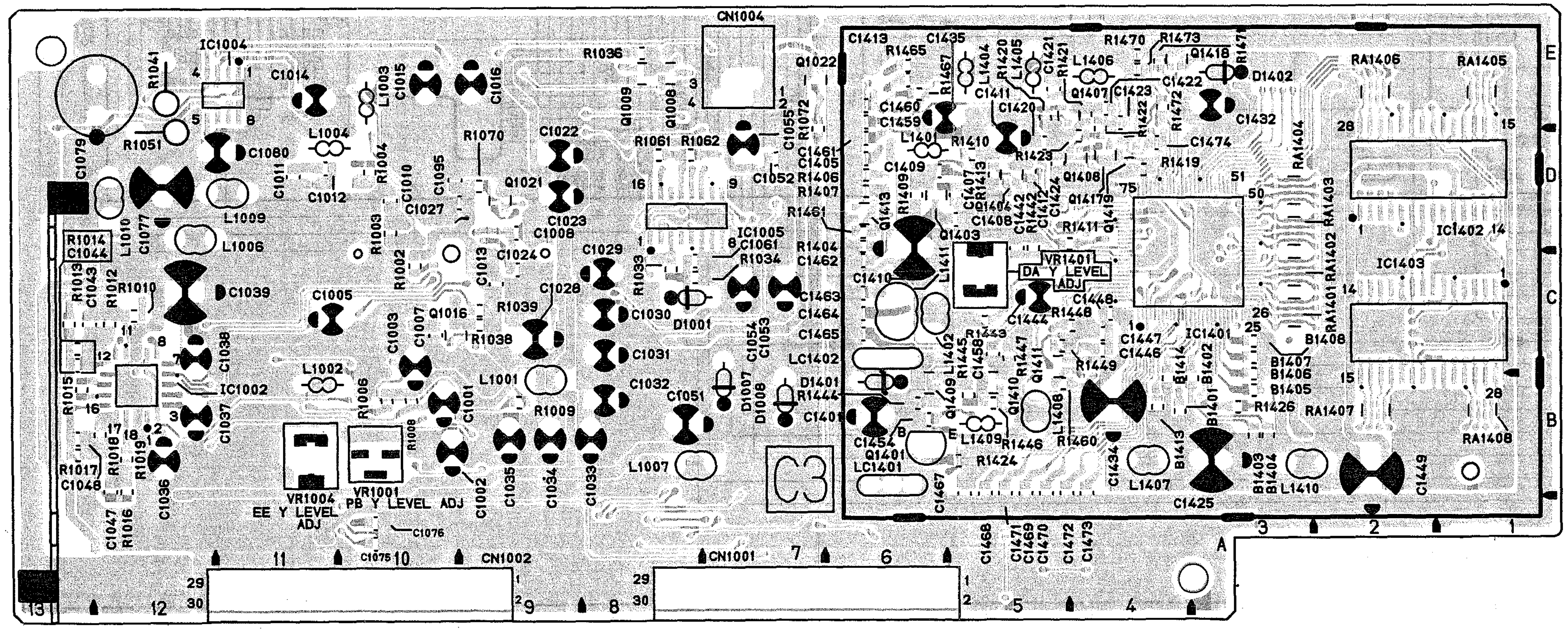

05 3D SVHS(3D/TBC)
TO 3D SVHS(VIDEO) (Page 4-27)
Y_FROM_DIGI
C_FROM_DIGI
V/Y_TO_DIGI
C_TO_DIGI
SW5V
GND
EE(H)
DOC
FSC
C-KILLER
V.REF
LBOX(H)
TRICK
I2C_CLK
I2C_DATA
SLOW_P
D.FF
VP_CTL
IC1401 JCP8010
IC1402 MN47V77S
IC1403 MN47V77S
Q1401 2SC1317/RS
Q1402 2SC4081/QRS
Q1403 2SC4081/QRS
Q1404 2SC4081/S
Q1405 2SC4081/QRS
Q1406 2SA1576A/QR
Q1407 2SA1576A/QR
Q1408 2SA1576A/QR
Q1409 2SA1576A/QR
Q1410 2SC4081/QRS
Q1411 2SA1576A/QR
Q1412 DTC144WUA
Q1413 DTC144WUA
Q1414 DTC144WUA
Q1416 DTC144WUA
Q1417 2SC4081/QRS
Q1418 DTC144WUA
Q1419 DTA144WUA
D1401 RD4.3ES/B2
D1402 1SS133
VR1401 DA Y LEVEL ADJ
RA1401 OPEN
RA1402 OPEN
RA1403 OPEN
RA1404 OPEN
RA1405 OPEN
RA1406 OPEN
RA1407 OPEN
RA1408 OPEN
COMP
IREF
VREF
AVDD
AVSS
CLAMP
YVIN
VRTY
VRTC
VRBY
VRBC
CIN
PVREF
PIREF
PCOMP
RFSC
PFSC
PCO
VCO
COUT
YOUT
AYDO
DFFO
KILLER
MON0
MON1
MON2
MON3
MTO
RST
TS1
VSS
VDD
MYI0
MYI1
MYI2
MYI3
MYI4
MYI5
MYI6
MYI7
YRE
MYO0
MYO1
MYO2
MYO3
MYO4
MYO5
MYO6
MYO7
YWE
RSTR
RSTW
SWRCK
SWRCK2
MCO0
MCO1
MCO2
MCO3
MCO4
MCO5
MCO6
MCO7
CWE
LBOXH
FSCIN
TRICK
SLOWP
SCLK
SDATA
DOC
DFFI
VPLS
VR
TCLK
CKMODE
MCI0
MCI1
MCI2
MCI3
CRE
MCI4
MCI5
MCI6
MCI7
1
2
3
4
5
A
B
C
D
E
F
G
H

4.14 3D SVHS CIRCUIT BOARD

— FOIL SIDE (B) —


LPB10033 -004A
3D SVHS PWB
LPA10033
3D SVHS PWB ASS'Y
UL MARK
VR1401 DA Y LEVEL ADJ
VR1004 EE Y LEVEL ADJ
VR1001 PB Y LEVEL ADJ
CN1001
CN1002
CN1004
IC1001
IC1003
A
B
C
D
E
1
2
3
4
5
6
7
8
9
10
11
12
13

— COMPONENT SIDE (A) —


CN1004
CN1001
CN1002
IC1002
IC1004
IC1005
IC1401
IC1402
IC1403
VR1401 DA Y LEVEL ADJ
VR1004 EE Y LEVEL ADJ
VR1001 PB Y LEVEL ADJ
C3
A
B
C
D
E
1
2
3
4
5
6
7
8
9
10
11
12
13

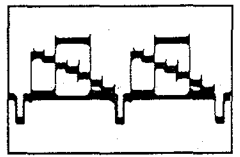
COMPONENT PARTS LOCATION GUIDE (3D SVHS)

REF.NO.	LOCATION		
CAPACITOR			
C1001	A	D	10B
C1002	A	D	10B
C1003	A	D	10C
C1004	B	C	11C
C1005	A	D	10C
C1006	B	C	11C
C1007	A	C	10C
C1008	A	C	9D
C1009	B	C	11D
C1010	A	C	10D
C1011	A	C	11D
C1012	A	C	11D
C1013	A	C	9C
C1014	A	D	11E
C1015	A	D	10E
C1016	A	D	9E
C1019	B	C	9E
C1020	B	C	9E
C1021	B	C	9E
C1022	A	D	9D
C1023	A	D	9D
C1024	A	C	9C
C1026	B	C	10B
C1027	A	C	10D
C1028	A	D	9C
C1029	A	D	8C
C1030	A	D	8C
C1031	A	D	8C
C1032	A	D	8B
C1033	A	D	8B
C1034	A	D	9B
C1035	A	D	9B
C1036	A	D	12B
C1037	A	D	12B
C1038	A	D	12C
C1039	A	D	12C
C1040	B	C	12C
C1041	B	C	12C
C1042	B	C	13C
C1043	A	C	13C
C1044	A	C	13C
C1045	B	C	12C
C1046	B	C	13C
C1047	A	C	12B
C1048	A	C	13B
C1049	B	C	13B
C1050	B	C	12B
C1051	A	D	8B
C1052	A	C	7D
C1053	A	D	7C
C1054	A	D	7C
C1055	A	D	7D
C1060	B	C	8D
C1061	A	C	8C
C1075	A	C	10A
C1076	A	C	10A
C1077	A	D	12D
C1078	B	C	12D
C1079	A	D	12E
C1080	A	D	12D
C1081	B	C	12E
C1082	B	C	9D
C1083	B	C	8D
C1084	B	C	8D
C1085	B	C	8D
C1086	B	C	8D
C1095	A	C	10D
C1401	A	D	6B
C1402	B	C	6B
C1403	B	C	6D
C1404	B	C	6D
C1405	A	C	6D
C1406	B	C	6D
C1407	A	C	5D
C1408	A	C	5D
C1409	A	C	6D
C1410	A	D	6D
C1411	A	D	5D
C1412	A	C	5D
C1413	A	C	6E
C1414	B	C	6E
C1415	B	C	5E
C1416	B	C	5E
C1417	B	C	5E
C1418	B	C	5E
C1419	B	C	4E
C1420	A	C	5D
C1421	A	C	5E
C1422	A	C	4E
C1423	A	C	4E
C1424	A	C	5D
C1425	A	D	3B
C1426	B	C	4C
C1427	B	C	4C
C1428	B	C	3C
C1429	B	C	3C
C1430	B	C	3D
C1431	B	C	3D
C1432	A	D	3E
C1433	B	C	4D
C1434	A	D	4B
C1435	A	D	5E
C1436	B	C	4D
C1437	B	C	5D
C1438	B	C	4D
C1439	B	C	4D
C1440	B	C	4D
C1441	B	C	4D
C1442	A	C	5D
C1443	B	C	5C
C1444	A	D	5C
C1445	B	C	4C
C1446	A	C	4C
C1447	A	C	4C
C1448	A	C	4C
C1449	A	D	2B
C1450	B	C	2D
C1451	B	C	1E
C1452	B	C	2C
C1453	B	C	2B
C1454	A	C	6B
C1455	B	C	5B
C1456	B	C	5B
C1457	B	C	5B
C1458	A	C	5C
C1459	A	C	6E
C1460	A	C	6E
C1461	A	C	6D
C1462	A	C	6C
C1463	A	C	6C
C1464	A	C	6C
C1465	A	C	6C
C1466	B	C	6A
C1467	A	C	5B
C1468	A	C	5B
C1469	A	C	5B
C1470	A	C	5B
C1471	A	C	5B
C1472	A	C	5B
C1473	A	C	4B
C1474	A	C	4D
CONNECTOR			
CN1001	A	D	6A
CN1002	A	D	9A
CN1004	A	D	7E
DIODE			
D1001	A	D	7C
D1007	A	D	7C
D1008	A	D	7B
D1401	A	D	6B
D1402	A	D	3E
IC			
IC1001	B	C	10D
IC1002	A	C	12B
IC1003	B	C	7D
IC1004	A	C	11E
IC1005	A	C	8D
IC1401	A	C	4D
IC1402	A	C	2D
IC1403	A	C	2C
COIL			
L1001	A	D	9B
L1002	A	D	11B
L1003	A	D	10E
L1004	A	D	10D
L1006	A	D	12D
L1007	A	D	8B
L1009	A	D	11D
L1010	A	D	12D
L1401	A	D	6D
L1402	A	D	6C
L1404	A	D	5E
L1405	A	D	5E
L1406	A	D	4E
L1407	A	D	4B
L1408	A	D	5B
L1409	A	D	5B
L1410	A	D	3B
L1411	A	D	6C
TRANSISTOR			
Q1001	B	C	11D
Q1003	B	C	8B
Q1008	A	C	8E
Q1009	A	C	8E
Q1010	B	C	8E
Q1011	B	C	12E
Q1013	B	C	12E
Q1016	A	C	10C
Q1017	B	C	7C
Q1018	B	C	11B
Q1019	B	C	11B
Q1020	B	C	10B
Q1021	A	C	9D
Q1022	A	C	7E
Q1401	A	D	6B
Q1402	B	C	6D
Q1403	A	C	6D
Q1404	A	C	5D
Q1405	B	C	6E
Q1406	B	C	4D
Q1407	A	C	5E
Q1408	A	C	4D
Q1409	A	C	6B
Q1410	A	C	5B
Q1411	A	C	5C
Q1412	B	C	5B
Q1413	A	C	6D
Q1414	B	C	4D
Q1416	B	C	5D
Q1417	A	C	4D
Q1418	A	C	4E
Q1419	A	C	4D
RESISTOR			
R1001	B	C	11C
R1002	A	C	10C
R1003	A	C	10D
R1004	A	C	10D
R1005	B	C	10C
R1006	A	C	10B
R1007	B	C	9E
R1008	A	C	10B
R1009	A	C	9B
R1010	A	C	12C
R1011	B	C	13C
R1012	A	C	12C
R1013	A	C	13C
R1014	A	C	13C
R1015	A	C	13B
R1016	A	C	12B
R1017	A	C	13B
R1018	A	C	12B
R1019	A	C	12B
R1020	B	C	13B
R1021	B	C	12B
R1022	B	C	8C
R1033	A	C	8C
R1034	A	C	8C
R1035	B	C	8E
R1036	A	C	8E
R1038	A	C	9C
R1039	A	C	9C
R1040	B	C	11E
R1041	A	D	12E
R1042	B	C	8C
R1043	B	C	7B
R1044	B	C	7C
R1049	B	C	10B
R1050	B	C	10E
R1051	A	D	12E
R1052	B	C	10C
R1061	A	C	8D
R1062	A	C	8D
R1070	A	C	9D
R1071	B	C	10B
R1072	A	C	7E
R1401	B	C	6B
R1402	B	C	6B
R1403	B	C	6D
R1404	A	C	6D
R1405	B	C	6D
R1406	A	C	6D
R1407	A	C	6D
R1408	B	C	5D
R1409	A	C	6D
R1410	A	C	5D
R1411	A	C	5D
R1412	B	C	5D
R1413	A	C	5D
R1414	B	C	6E
R1415	B	C	6E
R1416	B	C	5D
R1417	B	C	4D
R1418	B	C	4D
R1419	A	C	4D
R1420	A	C	5E
R1421	A	C	4E
R1422	A	C	4E
R1423	A	C	4D
R1424	A	C	5B
R1425	B	C	6B
R1426	A	C	3B
R1427	B	C	3C
R1428	B	C	3C
R1429	B	C	3C
R1430	B	C	3E
R1431	B	C	3D
R1432	B	C	3D
R1433	B	C	3D
R1434	B	C	3D
R1435	B	C	4D
R1436	B	C	5C
R1437	B	C	5D
R1438	B	C	5B
R1439	B	C	5D
R1440	B	C	5D
R1442	A	C	5D
R1443	A	C	5C
R1444	A	C	6B
R1445	A	C	5B
R1446	A	C	5B
R1447	A	C	5C
R1448	A	C	4C
R1449	A	C	5C
R1450	B	C	6C
R1451	B	C	6C
R1452	B	C	6C
R1453	B	C	5B
R1454	B	C	5B
R1455	B	C	5B
R1456	B	C	5B
R1457	B	C	5B
R1458	B	C	4B
R1459	B	C	4B
R1460	A	C	5B
R1461	A	C	6D
R1462	B	C	4D
R1463	B	C	6B
R1464	B	C	5C
R1465	A	C	6E
R1467	A	C	6E
R1468	B	C	4D
R1470	A	C	4E
R1471	A	C	4E
R1472	A	C	4E
R1473	A	C	4E
OTHER			
LC1401	A	D	6B
LC1402	A	D	6C
RA1401	A	C	3C
RA1402	A	C	3C
RA1403	A	C	3D
RA1404	A	C	3D
RA1405	A	C	1E
RA1406	A	C	2E
RA1407	A	C	2B
RA1408	A	C	1B
VR1001	A	D	10B
VR1004	A	D	11B
VR1401	A	D	5C

WAVEFORMS

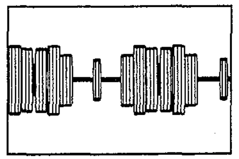
— 2D SVHS(VIDEO) —

WF1 IC1003-1



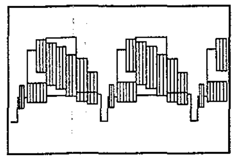
REC 1.0 Vp-p
50 mV/20 µsec/DIV

WF2 IC1005-12



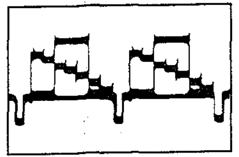
REC 0.7 Vp-p
20 mV/20 µsec/DIV

WF3 IC1001-48



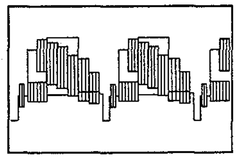
REC 1.0 Vp-p
50 mV/20 µsec/DIV

WF4 IC1001-46



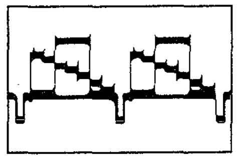
REC 1.0 Vp-p
50 mV/20 µsec/DIV

WF5-1 IC1001-39



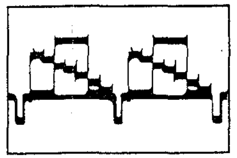
REC 1.8 Vp-p
50 mV/20 µsec/DIV

WF5-2 IC1001-39



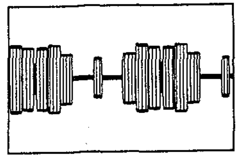
PB 1.7 Vp-p
50 mV/20 µsec/DIV

WF6 IC1001-37



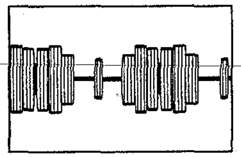
REC/PB 0.8 Vp-p
20 mV/20 µsec/DIV

WF7 IC1001-35



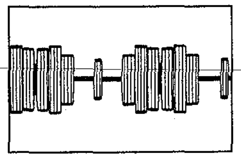
REC 0.7 Vp-p
20 mV/20 µsec/DIV

WF8-1 IC1001-33



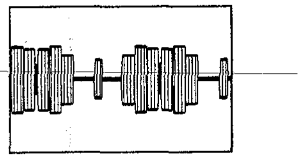
REC 0.36 Vp-p
10 mV/20 µsec/DIV

WF8-2 IC1001-33



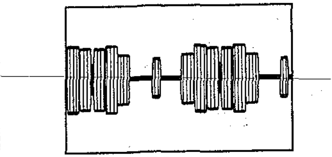
PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF9 IC1001-28



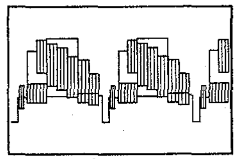
REC 0.7 Vp-p
20 mV/20 µsec/DIV

WF10 IC1001-26



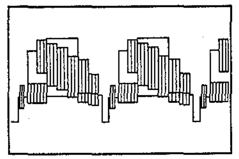
REC/PB 1.5 Vp-p
50 mV/20 µsec/DIV

WF11-1 IC1001-25



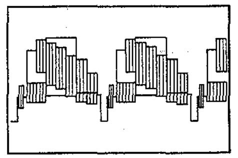
REC 2.1 Vp-p
50 mV/20 µsec/DIV

WF11-2 IC1001-25



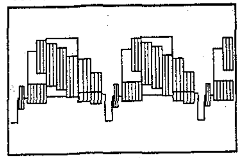
PB 2.3 Vp-p
50 mV/20 µsec/DIV

WF12-1 IC1001-23



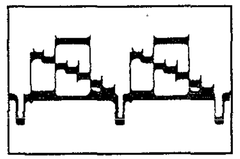
REC 2.2 Vp-p
50 mV/20 µsec/DIV

WF12-2 IC1001-23



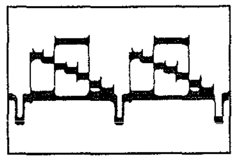
PB 2.4 Vp-p
50 mV/20 µsec/DIV

WF13-1 IC1001-21



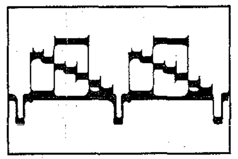
REC 2.1 Vp-p
50 mV/20 µsec/DIV

WF13-2 IC1001-21



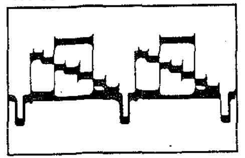
PB 2.3 Vp-p
50 mV/20 µsec/DIV

WF14 IC1001-5



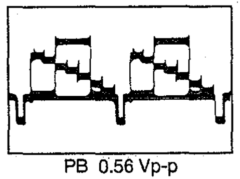
PB 0.54 Vp-p
20 mV/20 µsec/DIV

WF15-1 IC1001-56



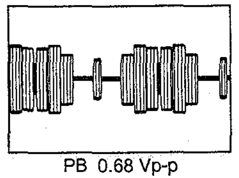
REC 0.5 Vp-p
20 mV/20 µsec/DIV

WF15-2 IC1001-56



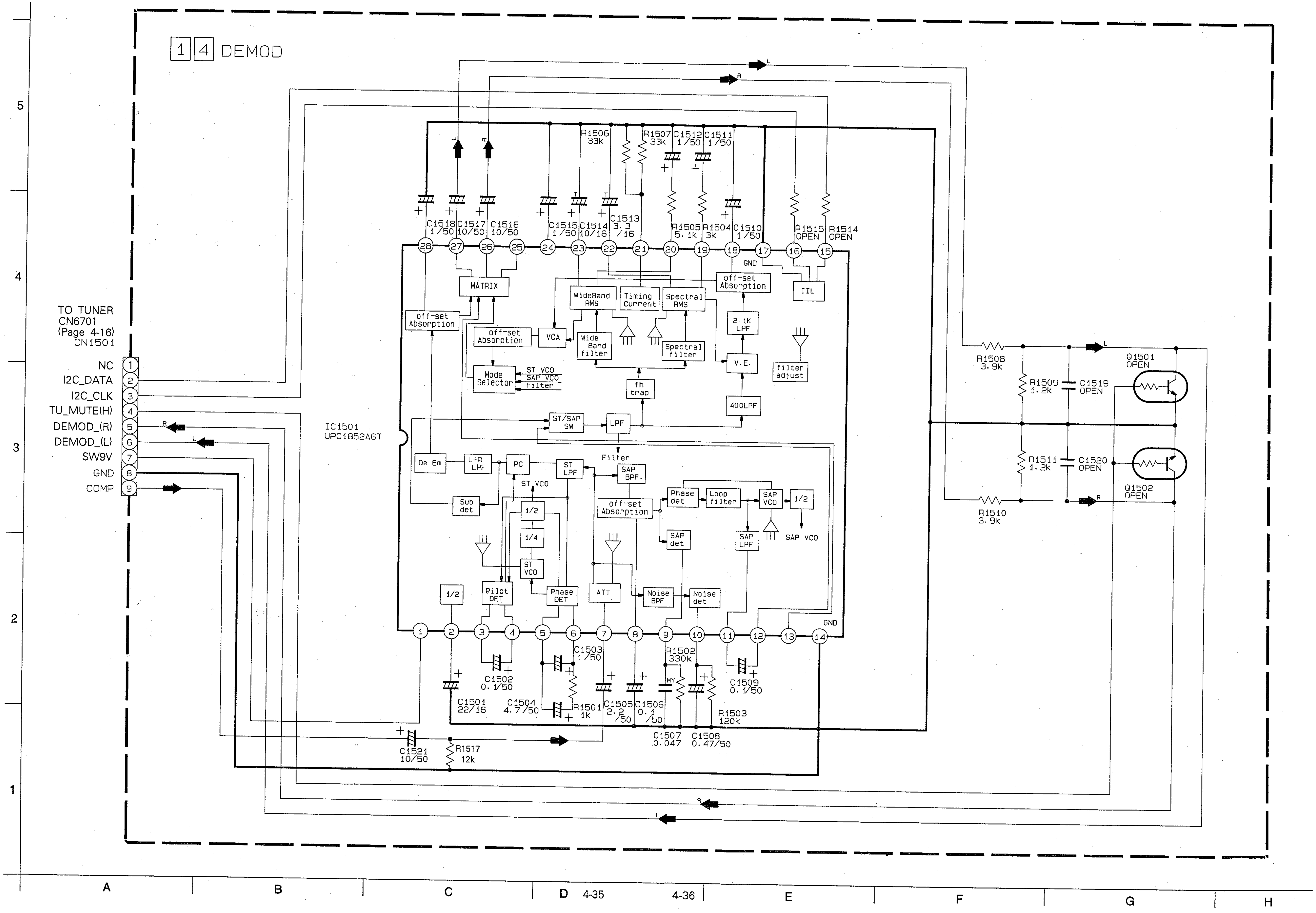
PB 0.56 Vp-p
20 mV/20 µsec/DIV

WF16 CN1001-22



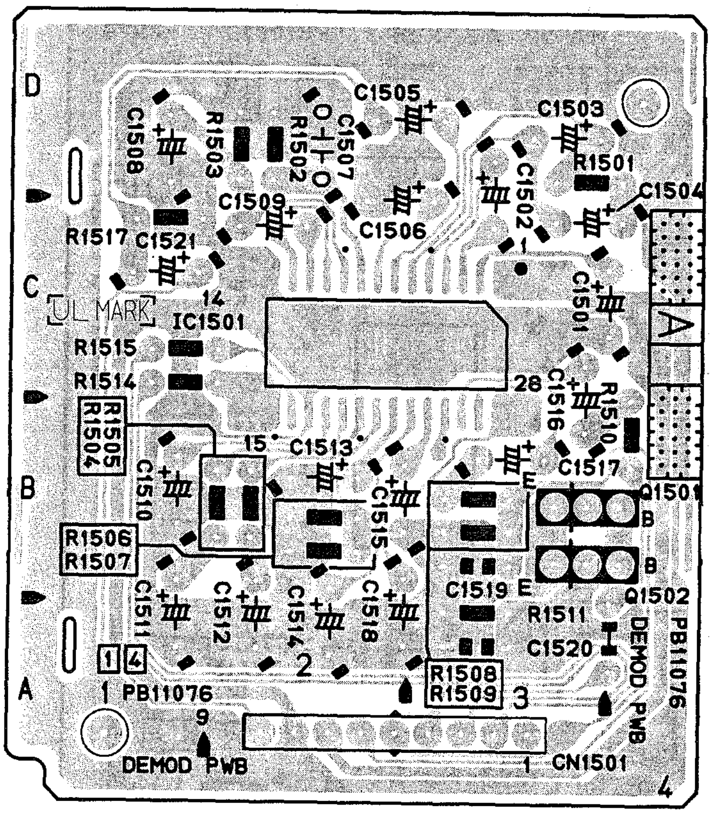
PB 0.68 Vp-p
20 mV/20 µsec/DIV

4.15 DEMODULATOR SCHEMATIC DIAGRAM



1 4 DEMOD
TO TUNER
CN6701
(Page 4-16)
CN1501
NC
I2C_DATA
I2C_CLK
TU_MUTE(H)
DEMOD_(R)
DEMOD_(L)
SW9V
GND
COMP
IC1501
UPC1852AGT
R1506 33k
R1507 33k
C1512 1/50
C1511 1/50
C1518 1/50
C1517 10/50
C1516 10/50
C1515 1/50
C1514 10/16
C1513 3.3/16
R1505 5.1k
R1504 3k
C1510 1/50
R1515 OPEN
R1514 OPEN
GND
MATRIX
off-set Absorption
WideBand RMS
Timing Current
Spectral RMS
IIL
2.1K LPF
VCA
Wide Band filter
Spectral filter
V.E.
filter adjust
Mode Selector
ST VCO
SAP VCO
Filter
fh trap
400LPF
ST/SAP SW
LPF
Filter
De Em
L+R LPF
PC
ST LPF
SAP BPF.
Sub det
ST VCO
1/2
1/4
Phase det
Loop filter
SAP VCO
1/2
SAP VCO
SAP det
SAP LPF
Pilot DET
Phase DET
ATT
Noise BPF
Noise det
R1508 3.9k
R1509 1.2k
C1519 OPEN
Q1501 OPEN
R1511 1.2k
C1520 OPEN
Q1502 OPEN
R1510 3.9k
L
R
C1503 1/50
C1502 0.1/50
C1501 22/16
C1504 4.7/50
R1501 1k
C1505 2.2/50
C1506 0.1/50
R1502 330k
MY
C1507 0.047
C1508 0.47/50
R1503 120k
C1509 0.1/50
C1521 10/50
R1517 12k
1
2
3
4
5
A
B
C
D
E
F
G
H

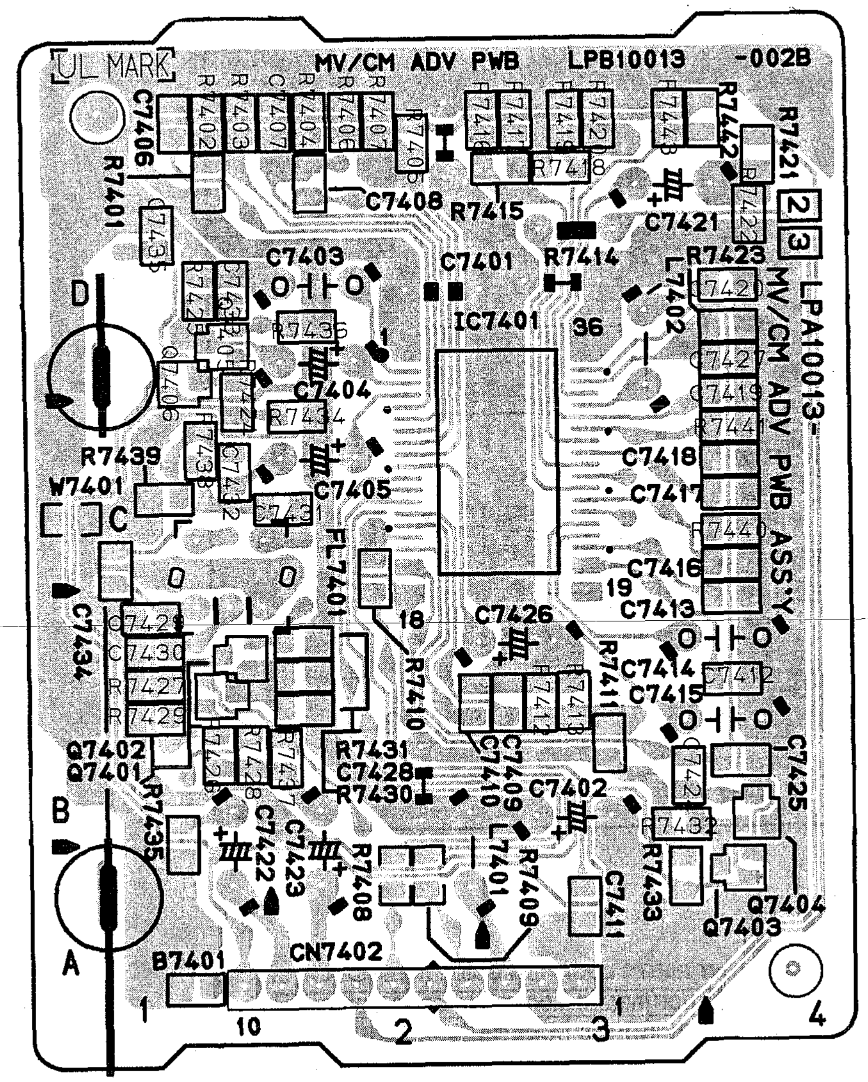
4.16 DEMODULATOR CIRCUIT BOARD


D
C
B
A
C1505
C1503
C1508
R1503
R1502
C1507
R1501
C1502
C1504
C1509
C1506
R1517
C1521
14
UL MARK
IC1501
C1501
A
R1515
R1514
28
C1516
R1510
R1505
R1504
15
C1513
C1517
E
Q1501
B
C1510
C1515
R1506
R1507
B
C1519
E
Q1502
C1511
C1512
C1514
C1518
R1511
C1520
PB11076
DEMOD PWB
1
4
2
R1508
R1509
3
1
PB11076
9
DEMOD PWB
1
CN1501
4

COMPONENT PARTS LOCATION GUIDE (DEMODULATOR)

REF.NO.	LOCATION			REF.NO.	LOCATION			REF.NO.	LOCATION		
CAPACITOR				C1518	A	D	3A	**RESISTOR**			
C1501	A	D	4C	C1519	A	D	3B	R1501	A	D	4C
C1502	A	D	3D	C1520	A	D	3A	R1502	A	D	2C
C1503	A	D	4D	C1521	A	D	2C	R1503	A	D	2C
C1504	A	D	4C					R1504	A	D	2B
C1505	A	D	3D	**CONNECTOR**				R1505	A	D	2B
C1506	A	D	3C	CN1501	A	D	3A	R1506	A	D	2B
C1507	A	D	2C					R1507	A	D	2B
C1508	A	D	1D					R1508	A	D	3B
C1509	A	D	2C	**IC**				R1509	A	D	3B
C1510	A	D	1B	IC1501	B	C	2C	R1510	A	D	4B
C1511	A	D	1A					R1511	A	D	3A
C1512	A	D	2A					R1514	A	D	2B
C1513	A	D	2B	**TRANSISTOR**				R1515	A	D	2C
C1514	A	D	2A					R1517	A	D	2C
C1515	A	D	3B	Q1501	A	D	3B				
C1516	A	D	3C	Q1502	A	D	3B				
C1517	A	D	3B								

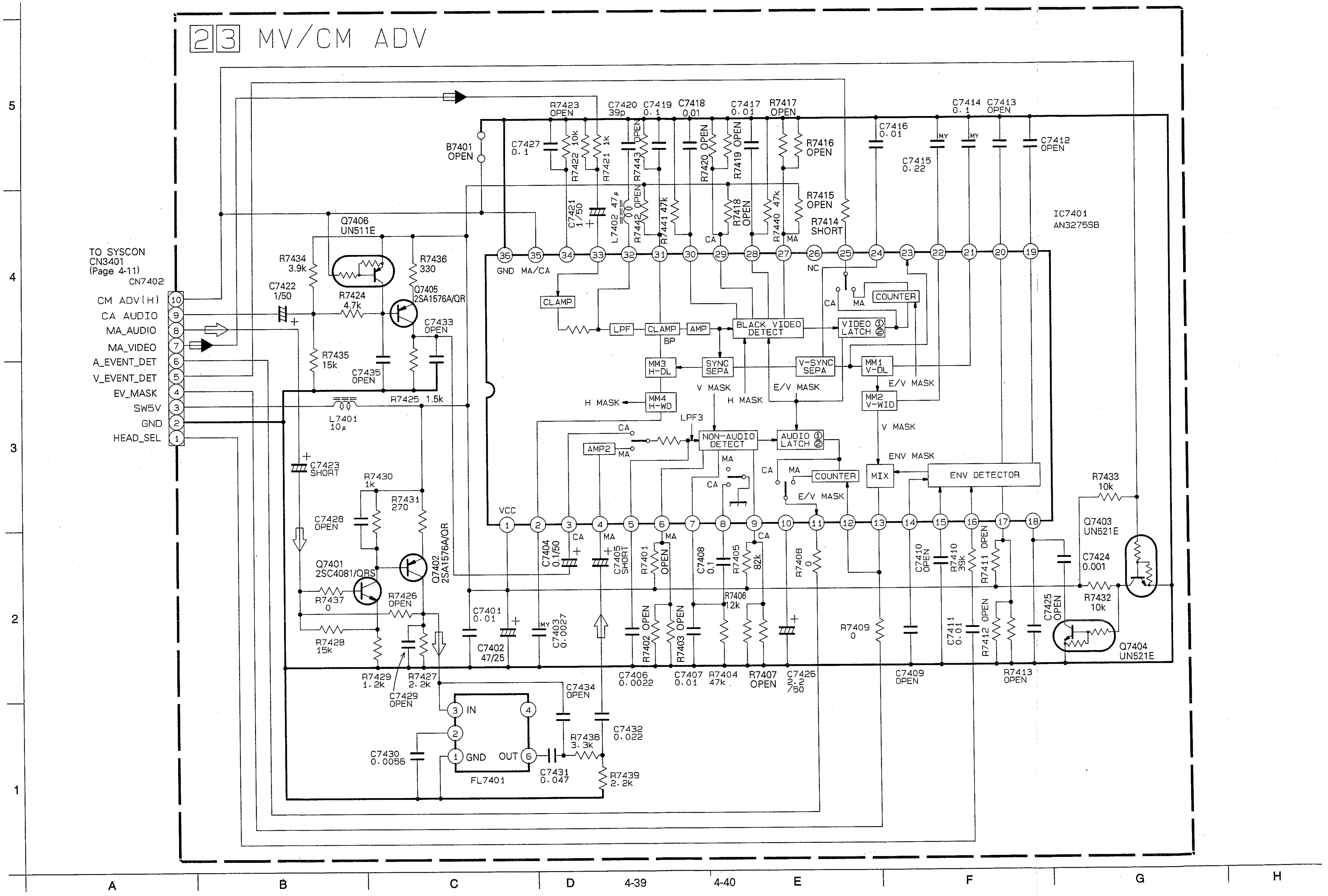
4.17 MOVIE/COMMERCIAL ADVANCE CIRCUIT BOARD


UL MARK
MV/CM ADV PWB
LPB10013
-002B
LPA10013-
MV/CM ADV PWB ASS'Y
IC7401
CN7402
FL7401
L7401
L7402
W7401
B7401
Q7401
Q7402
Q7403
Q7404
C7401
C7402
C7403
C7404
C7405
C7406
C7408
C7409
C7410
C7411
C7413
C7414
C7415
C7416
C7417
C7418
C7421
C7422
C7423
C7425
C7426
C7428
C7434
R7401
R7408
R7409
R7410
R7411
R7414
R7415
R7421
R7423
R7430
R7431
R7433
R7435
R7439
R7442
1
18
19
36
A
B
C
D
1
2
3
4
10

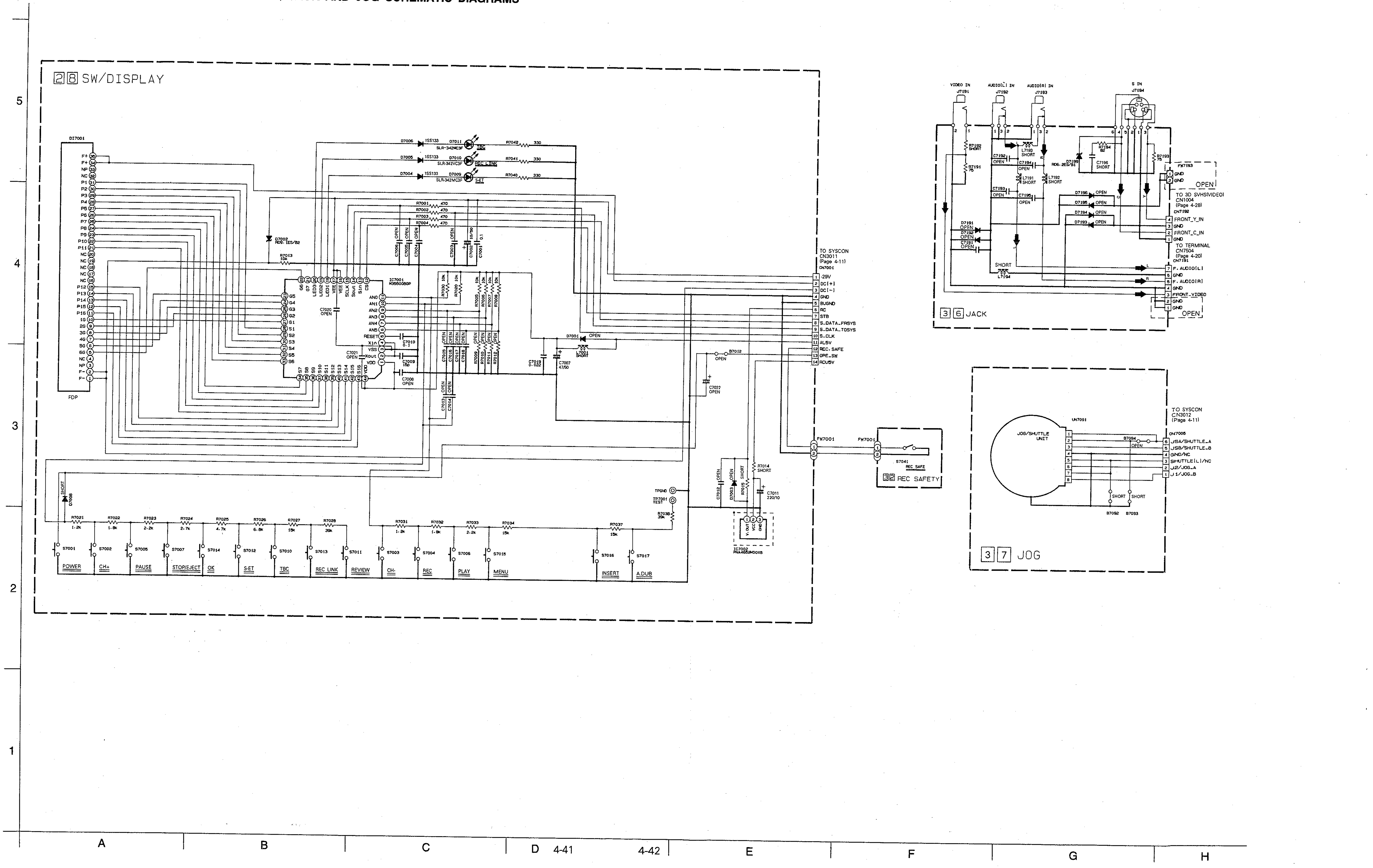
COMPONENT PARTS LOCATION GUIDE (MV/CM ADVANCE)

REF.NO.	LOCATION		
CAPACITOR			
C7401	A	D	2D
C7402	A	D	3B
C7403	A	D	2D
C7404	A	D	2D
C7405	A	D	2C
C7406	B	C	1E
C7407	B	C	2E
C7408	B	C	2D
C7409	B	C	3B
C7410	B	C	2B
C7411	B	C	3A
C7412	B	C	4B
C7413	B	C	4B
C7414	A	D	4B
C7415	A	D	4B
C7416	B	C	4C
C7417	B	C	4C
C7418	B	C	4C
C7419	B	C	4C
C7420	B	C	4D
C7421	A	D	3D
C7422	A	D	1B
C7423	A	D	2A
C7424	B	C	3B
C7425	B	C	4B
C7426	A	D	3B
C7427	B	C	4D
C7428	B	C	2B
C7429	B	C	1B
C7430	B	C	1B
C7431	B	C	2C
C7432	B	C	1C
C7433	B	C	1D
C7434	B	C	1C
C7435	B	C	1D
CONNECTOR			
CN7402	A	D	3A
IC			
IC7401	B	C	3C
COIL			
L7401	A	D	2B
L7402	A	D	3C
TRANSISTOR			
Q7401	B	C	1B
Q7402	B	C	1B
Q7403	B	C	4A
Q7404	B	C	4B
Q7405	B	C	1D
Q7406	B	C	1C
RESISTOR			
R7401	B	C	1D
R7402	B	C	1E
R7403	B	C	1E
R7404	B	C	2E
R7405	B	C	2E
R7406	B	C	2E
R7407	B	C	2E
R7408	B	C	2A
R7409	B	C	2A
R7410	B	C	2C
R7411	B	C	3B
R7412	B	C	3B
R7413	B	C	3B
R7414	A	D	3D
R7415	B	C	3D
R7416	B	C	3E
R7417	B	C	3E
R7418	B	C	3D
R7419	B	C	3E
R7420	B	C	3E
R7421	B	C	4D
R7422	B	C	4D
R7423	B	C	4D
R7424	B	C	1C
R7425	B	C	1D
R7426	B	C	1B
R7427	B	C	1B
R7428	B	C	1B
R7429	B	C	1B
R7430	B	C	2B
R7431	B	C	2B
R7432	B	C	3A
R7433	B	C	3A
R7434	B	C	2C
R7435	B	C	1A
R7436	B	C	2D
R7437	B	C	2B
R7438	B	C	1C
R7439	B	C	1C
R7440	B	C	4C
R7441	B	C	4C
R7442	B	C	4E
R7443	B	C	3E
OTHER			
FL7401	A	D	2B

4.18 MOVIE/COMMERCIAL ADVANCE SCHEMATIC DIAGRAM


23 MV/CM ADV
TO SYSCON CN3401 (Page 4-11)
CN7402
CM ADV(H) 10
CA AUDIO 9
MA_AUDIO 8
MA_VIDEO 7
A_EVENT_DET 6
V_EVENT_DET 5
EV_MASK 4
SW5V 3
GND 2
HEAD_SEL 1
B7401 OPEN
Q7406 UN511E
R7434 3.9k
R7436 330
C7422 1/50
R7424 4.7k
Q7405 2SA1576A/QR
C7433 OPEN
R7435 15k
C7435 OPEN
L7401 10μ
R7425 1.5k
C7423 SHORT
R7430 1k
R7431 270
C7428 OPEN
Q7401 2SC4081/QRS
Q7402 2SA1576A/QR
R7437 0
R7426 OPEN
R7428 15k
R7429 1.2k
R7427 2.2k
C7429 OPEN
C7401 0.01
C7402 47/25
C7403 0.0027
MY
C7404 0.1/50
C7405 SHORT
C7434 OPEN
IN
GND
OUT
FL7401
C7430 0.0056
C7431 0.047
R7438 3.3k
R7439 2.2k
C7432 0.022
R7423 OPEN
C7427 0.1
R7422 10k
R7421 1k
C7421 1/50
L7402 47μ
C7420 39p
C7419 0.1
C7418 0.01
C7417 0.01
R7417 OPEN
R7443 OPEN
R7442 OPEN
R7441 47k
R7420 OPEN
R7419 OPEN
R7418 OPEN
R7440 47k
R7416 OPEN
R7415 OPEN
R7414 SHORT
C7416 0.01
C7415 0.22
C7414 0.1
C7413 OPEN
C7412 OPEN
IC7401 AN3275SB
GND MA/CA
NC
CA
MA
CLAMP
LPF
AMP
BP
BLACK VIDEO DETECT
VIDEO ① LATCH ②
COUNTER
MM3 H-DL
SYNC SEPA
V-SYNC SEPA
MM1 V-DL
V MASK
H MASK
E/V MASK
MM2 V-WID
MM4 H-WD
LPF3
AMP2
NON-AUDIO DETECT
AUDIO ① LATCH ②
MIX
ENV MASK
ENV DETECTOR
VCC
R7401 OPEN
R7402 OPEN
R7403 OPEN
C7406 0.0022
C7407 0.01
C7408 0.1
R7404 47k
R7405 82k
R7406 12k
R7407 OPEN
C7426 2.2/50
R7408 0
R7409 0
C7409 OPEN
C7410 OPEN
R7410 39k
C7411 0.01
R7411 OPEN
R7412 OPEN
R7413 OPEN
C7425 OPEN
C7424 0.001
R7432 10k
R7433 10k
Q7403 UN521E
Q7404 UN521E
5
4
3
2
1
A
B
C
D
E
F
G
H

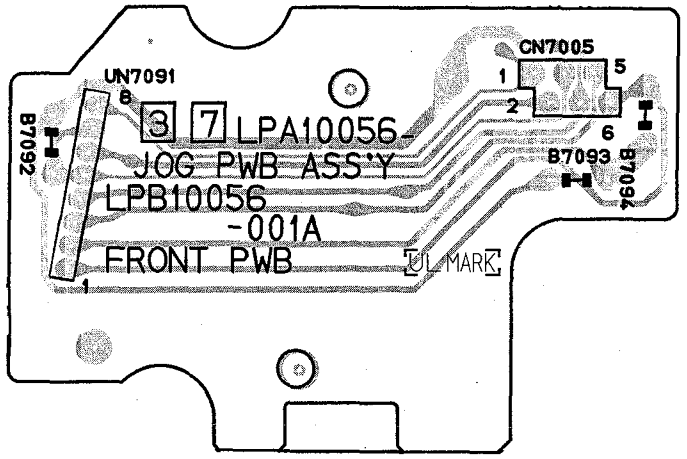
4.19 SWITCH/DISPLAY, REC SAFETY, JACK AND JOG SCHEMATIC DIAGRAMS



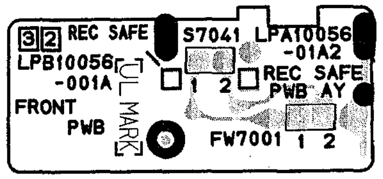
28 SW/DISPLAY
DI7001
FDP
IC7001 M35500080FP
D7006 1SS133
D7005 1SS133
D7004 1SS133
D7011 SLR-342MC3F TBC
D7010 SLR-342VC3F REC LINK
D7009 SLR-342MC3F S-ET
R7042 330
R7041 330
R7040 330
R7001 470
R7002 470
R7003 470
R7004 470
D7002 RD6.2ES/B2
R7013 10k
C7020 OPEN
C7021 OPEN
C7010 0.1
C7009 15p
C7008 OPEN
C7019 0.022
C7007 47/50
D7001 OPEN
L7001 SHORT
B7012 OPEN
C7022 OPEN
TO SYSCON CN3011 (Page 4-11)
CN7001
1 -29V
2 DC(+)
3 DC(-)
4 GND
5 BUGND
6 RC
7 STB
8 S.DATA_FRSYS
9 S.DATA_TOSYS
10 S.CLK
11 AL5V
12 REC.SAFE
13 OPE_SW
14 RCU5V
FW7001
TPGND
TP7001 TEST
R7038 39k
R7014 SHORT
D7003 OPEN
C7012 OPEN
C7011 220/10
IC7002 PNA4652M00XB
V.OUT VCC GND
D7008 SHORT
R7021 1.2k
R7022 1.8k
R7023 2.2k
R7024 2.7k
R7025 4.7k
R7026 6.8k
R7027 15k
R7028 39k
R7031 1.2k
R7032 1.8k
R7033 2.2k
R7034 15k
R7037 15k
S7001 POWER
S7002 CH+
S7005 PAUSE
S7007 STOP/EJECT
S7014 OK
S7012 S-ET
S7010 TBC
S7013 REC LINK
S7011 REVIEW
S7003 CH-
S7004 REC
S7006 PLAY
S7015 MENU
S7016 INSERT
S7017 A.DUB
FW7001
S7041 REC SAFE
38 REC SAFETY
VIDEO IN J7191
AUDIO(L) IN J7192
AUDIO(R) IN J7193
S IN J7194
R7192 SHORT
R7191 75
L7193 SHORT
C7192 OPEN
C7194 OPEN
L7191 SHORT
L7192 SHORT
C7193 OPEN
C7195 OPEN
D7199 RD6.2ES/B1
R7194 82
C7196 SHORT
R7193 75
FW7193
GND
GND
OPEN
TO 3D SVHS(VIDEO) CN1004 (Page 4-28)
CN7192
4 FRONT_Y_IN
3 GND
2 FRONT_C_IN
1 GND
D7196 OPEN
D7195 OPEN
D7194 OPEN
D7193 OPEN
D7191 OPEN
D7192 OPEN
C7191 OPEN
SHORT L7194
TO TERMINAL CN7504 (Page 4-20)
CN7191
7 F.AUDIO(L)
6 GND
5 F.AUDIO(R)
4 GND
3 FRONT_VIDEO
2 GND
1 GND
OPEN
36 JACK
UN7091
JOG/SHUTTLE UNIT
B7094 OPEN
B7092 SHORT
B7093 SHORT
TO SYSCON CN3012 (Page 4-11)
CN7005
6 JSA/SHUTTLE_A
5 JSB/SHUTTLE_B
4 GND/NC
3 SHUTTLE(L)/NC
2 J2/JOG_A
1 J1/JOG_B
37 JOG
5
4
3
2
1
A
B
C
D
E
F
G
H

4.20 SWITCH/DISPLAY, REC SAFETY, JACK AND JOG CIRCUIT BOARDS

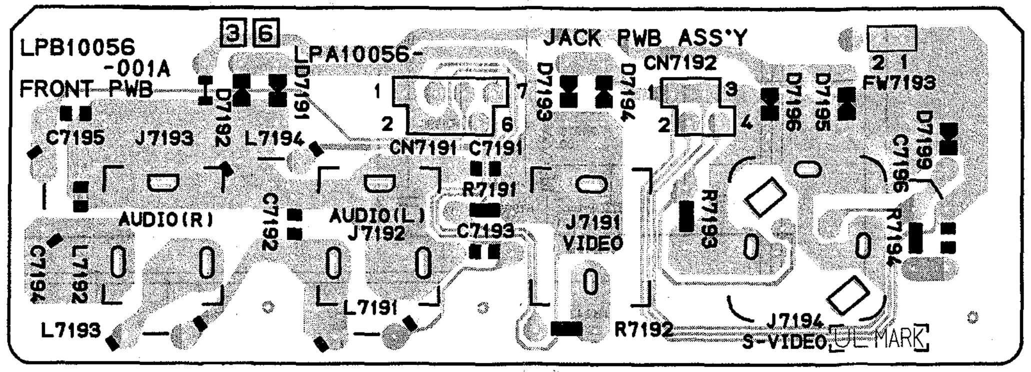
— JOG —


UN7091
CN7005
3 7 LPA10056-
JOG PWB ASS'Y
LPB10056
-001A
FRONT PWB
UL MARK
B7092
B7093
B7094

— REC SAFETY —


3 2 REC SAFE
LPB10056
-001A
FRONT PWB
S7041
LPA10056
-01A2
REC SAFE PWB AY
UL MARK
FW7001

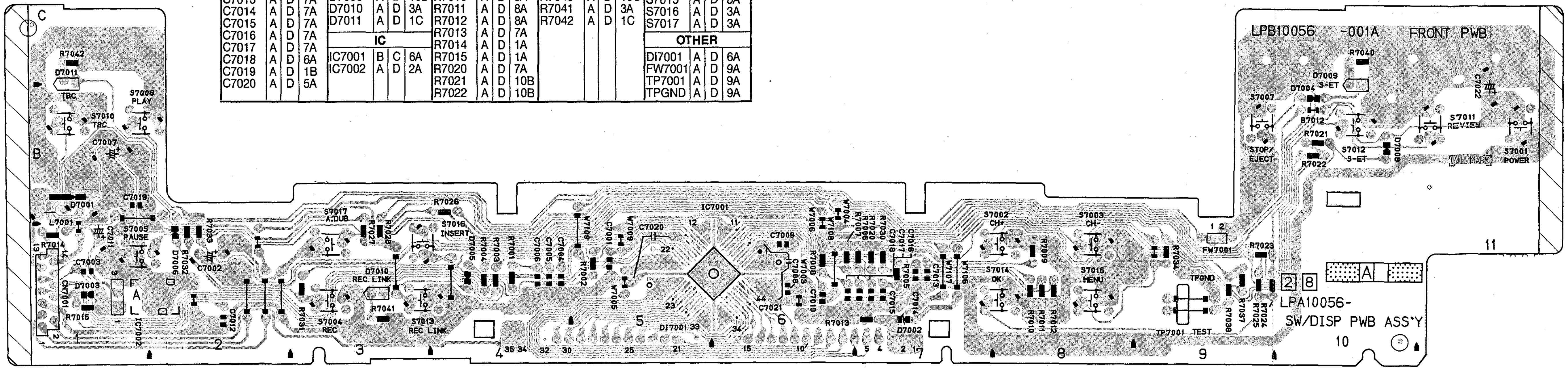
— JACK —


LPB10056
-001A
FRONT PWB
3 6
LPA10056-
JACK PWB ASS'Y
CN7191
CN7192
FW7193
C7195
J7193
L7194
C7191
R7191
AUDIO(R)
AUDIO(L)
J7192
C7193
J7191
VIDEO
R7193
R7194
C7196
C7192
C7194
L7192
L7193
L7191
R7192
J7194
S-VIDEO
UL MARK
D7191
D7192
D7193
D7194
D7195
D7196
D7199

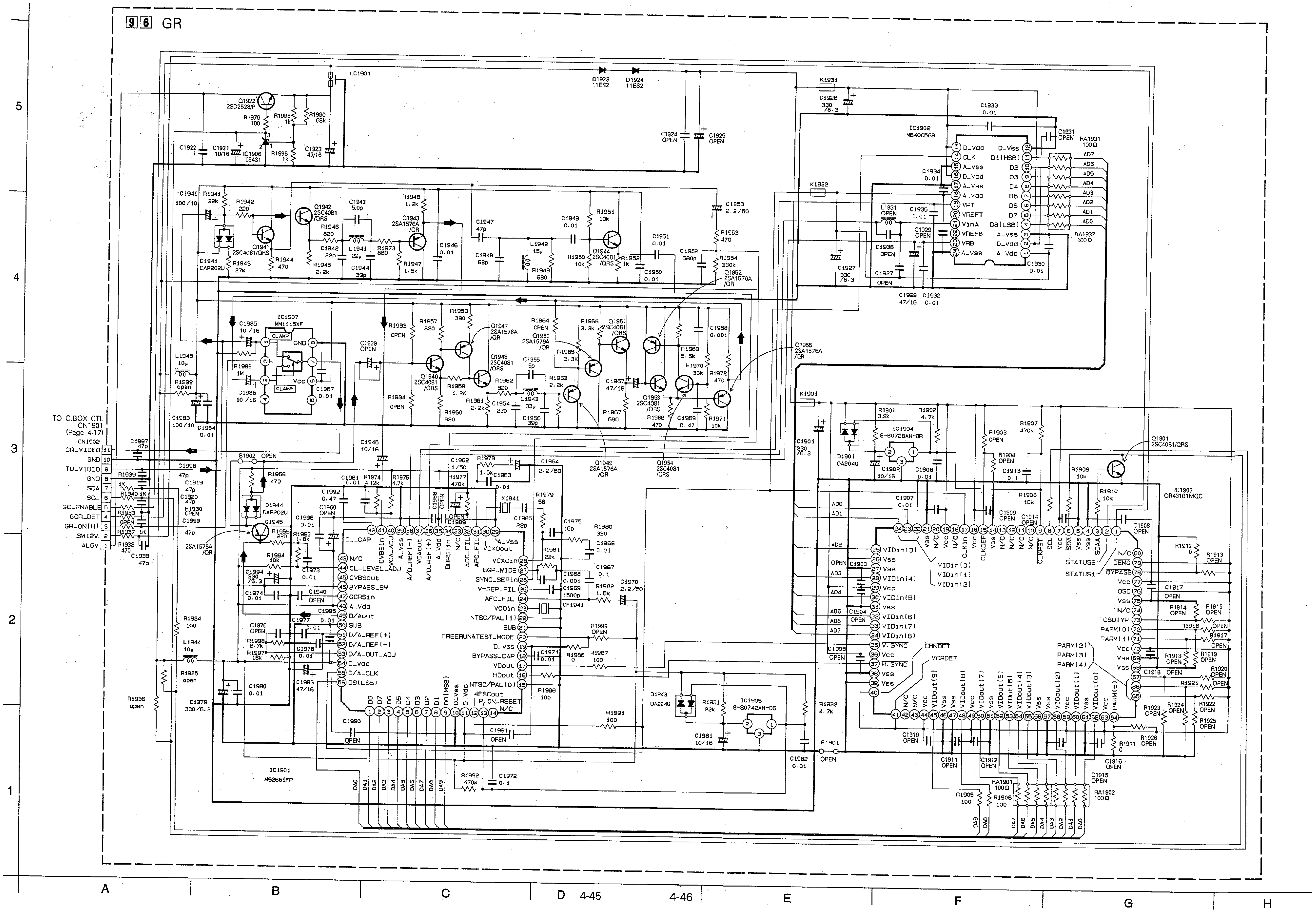
COMPONENT PARTS LOCATION GUIDE (SW/DISPLAY)

REF.NO.	LOCATION		
CAPACITOR			
C7001	A	D	5A
C7002	A	D	2A
C7003	A	D	1A
C7004	A	D	4A
C7005	A	D	4A
C7006	A	D	4A
C7007	A	D	1B
C7008	A	D	6A
C7009	A	D	6A
C7010	A	D	6A
C7011	A	D	1A
C7012	A	D	2A
C7013	A	D	7A
C7014	A	D	7A
C7015	A	D	7A
C7016	A	D	7A
C7017	A	D	7A
C7018	A	D	6A
C7019	A	D	1B
C7020	A	D	5A
C7021	A	D	6A
C7022	A	D	11B
CONNECTOR			
CN7001	A	D	1A
DIODE			
D7001	A	D	1B
D7002	A	D	7A
D7003	A	D	1A
D7004	A	D	10B
D7005	A	D	4A
D7006	A	D	2A
D7008	A	D	10B
D7010	A	D	3A
D7011	A	D	1C
IC			
IC7001	B	C	6A
IC7002	A	D	2A
COIL			
L7001	A	D	1B
RESISTOR			
R7001	A	D	4A
R7002	A	D	5A
R7003	A	D	4A
R7004	A	D	4A
R7005	A	D	7A
R7006	A	D	7A
R7007	A	D	6A
R7008	A	D	6A
R7009	A	D	8A
R7010	A	D	8A
R7011	A	D	8A
R7012	A	D	8A
R7013	A	D	7A
R7014	A	D	1A
R7015	A	D	1A
R7020	A	D	7A
R7021	A	D	10B
R7022	A	D	10B
R7023	A	D	9A
R7024	A	D	9A
R7025	A	D	9A
R7026	A	D	4B
R7027	A	D	3B
R7028	A	D	3A
R7030	A	D	7A
R7031	A	D	3A
R7032	A	D	2A
R7033	A	D	2B
R7034	A	D	9A
R7037	A	D	9A
R7038	A	D	9A
R7040	A	D	10C
R7041	A	D	3A
R7042	A	D	1C
SWITCH			
S7001	A	D	11B
S7002	A	D	8A
S7003	A	D	8A
S7004	A	D	3A
S7005	A	D	1A
S7006	A	D	1B
S7007	A	D	9B
S7010	A	D	1B
S7011	A	D	11B
S7012	A	D	10B
S7013	A	D	3A
S7014	A	D	8A
S7015	A	D	8A
S7016	A	D	3A
S7017	A	D	3A
OTHER			
DI7001	A	D	6A
FW7001	A	D	9A
TP7001	A	D	9A
TPGND	A	D	9A

— SWITCH/DISPLAY —


C
B
A
R7042
D7011
TBC
S7006
PLAY
S7010
TBC
C7007
D7001
C7019
L7001
R7014
C7011
S7005
PAUSE
C7003
D7003
CN7001
R7015
R7033
R7032
D7006
C7002
C7012
IC7002
R7031
S7017
A.DUB
R7027
R7028
S7004
REC
D7010
REC LINK
R7041
S7013
REC LINK
R7026
S7016
INSERT
D7005
R7004
R7003
R7001
C7006
C7005
C7004
R7002
R7109
C7001
W7009
C7020
IC7001
DI7001
C7009
C7008
C7010
C7021
R7013
D7002
S7002
CH+
S7003
CH-
S7014
OK
S7015
MENU
R7009
R7010
R7011
R7012
R7034
FW7001
TPGND
R7037
R7038
R7025
R7024
R7023
TP7001 TEST
2 8
LPA10056-
SW/DISP PWB ASS'Y
LPB10056 -001A FRONT PWB
R7040
D7009
S-ET
D7004
S7007
STOP/
EJECT
B7012
R7021
R7022
S7012
S-ET
D7008
S7011
REVIEW
S7001
POWER
C7022
UL MARK
1
2
3
4
5
6
7
8
9
10
11

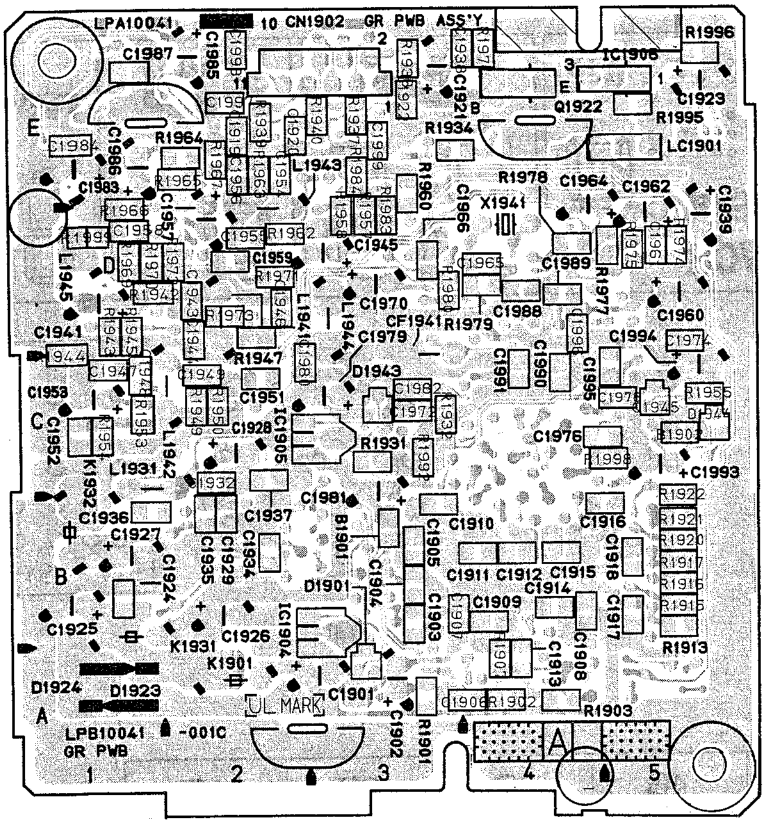
4.21 GR SCHEMATIC DIAGRAM



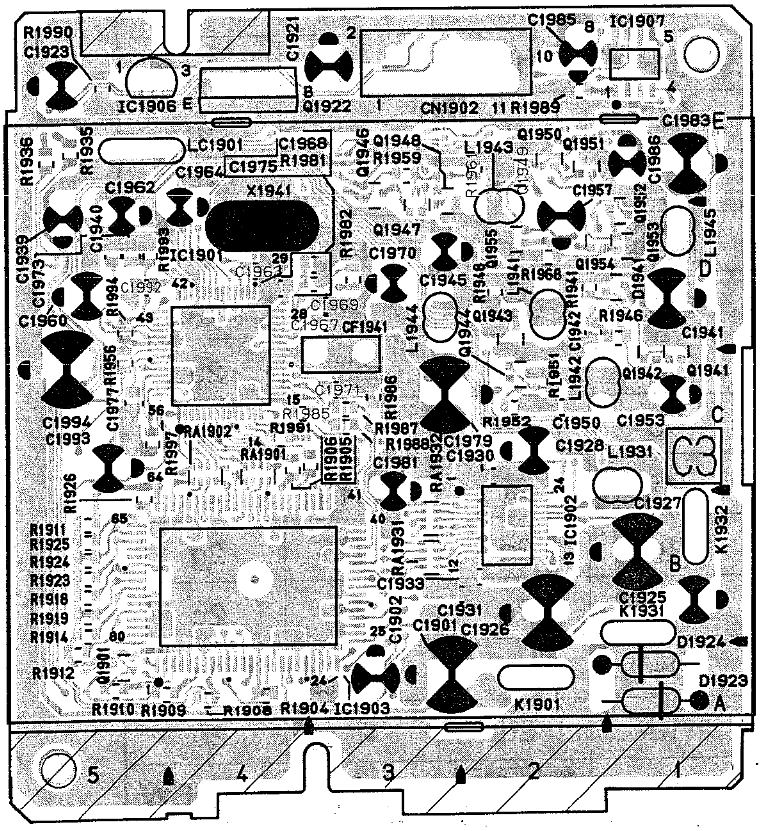
96 GR
TO C.BOX CTL CN1901 (Page 4-17)
CN1902
GR_VIDEO 11
GND 10
TU_VIDEO 9
GND 8
SDA 7
SCL 6
GC_ENABLE 5
GCR_DET 4
GR_ON(H) 3
SW12V 2
AL5V 1
LC1901
Q1922 2SD2528/P
IC1906 L5431
D1923 11ES2
D1924 11ES2
K1931
K1932
K1901
IC1902 MB40C568
D_Vdd
CLK
A_Vss
D_Vdd
A_Vss
A_Vdd
VRT
VREFT
VinA
VREFB
VRB
A_Vss
D_Vss
D1(MSB)
D2
D3
D4
D5
D6
D7
D8(LSB)
A_Vss
D_Vdd
A_Vdd
RA1931 100Ω
RA1932 100Ω
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
Q1941 2SC4081/QRS
Q1942 2SC4081/QRS
Q1943 2SA1576A/QR
Q1944 2SC4081/QRS
Q1952 2SA1576A/QR
D1941 DAP202U
L1941 22μ
L1942 15μ
IC1907 MM1115XF
CLAMP
GND
Vcc
Q1946 2SC4081/QRS
Q1947 2SA1576A/QR
Q1948 2SC4081/QRS
Q1949 2SA1576A/QR
Q1950 2SA1576A/QR
Q1951 2SC4081/QRS
Q1953 2SC4081/QRS
Q1954 2SC4081/QRS
Q1955 2SA1576A/QR
L1943 33μ
L1945 10μ
L1944 10μ
B1902 OPEN
D1944 DAP202U
Q1945 2SA1576A/QR
X1941
CF1941
IC1901 M52661FP
CVBSin
VCA_ADJ
A_Vss
VCAout
A/D_REF(-)
A_Vdd
A/D_REF(+)
BURSTin
N/C
ACC_FIL
APC_FIL
A_Vss
VCXOout
CL_CAP
N/C
CL_LEVEL_ADJ
CVBSout
BYPASS_SW
GCRSin
A_Vdd
D/Aout
SUB
D/A_REF(+)
D/A_REF(-)
D/A_OUT_ADJ
D_Vdd
D/A_CLK
D9(LSB)
VCXOin
BGP_WIDE
SYNC_SEPin
V-SEP_FIL
AFC_FIL
VCOin
NTSC/PAL(1)
SUB
FREERUN&TEST_MODE
D_Vss
BYPASS_CAP
VDout
HDout
NTSC/PAL(0)
D8
D7
D6
D5
D4
D3
D2
D1
D0(MSB)
D_Vss
D_Vdd
4FSCout
P, ON_RESET
N/C
DA0
DA1
DA2
DA3
DA4
DA5
DA6
DA7
DA8
DA9
IC1904 S-80728AN-DR
D1901 DA204U
Q1901 2SC4081/QRS
IC1903 OR43101MQC
D1943 DA204U
IC1905 S-80742AN-D6
B1901 OPEN
VIDin(3)
Vss
Vss
VIDin(4)
Vcc
VIDin(5)
Vss
VIDin(6)
VIDin(7)
VIDin(8)
V. SYNC
Vcc
H. SYNC
Vss
Vss
VIDin(0)
VIDin(1)
VIDin(2)
CHNDET
VCRDET
N/C
STATUS2
STATUS1
DEMO
BYPASS
Vcc
OSD
Vss
N/C
OSDTYP
PARM(0)
PARM(1)
Vcc
Vss
Vss
PARM(2)
PARM(3)
PARM(4)
VIDout(9)
VIDout(8)
VIDout(7)
VIDout(6)
VIDout(5)
VIDout(4)
VIDout(3)
VIDout(2)
VIDout(1)
VIDout(0)
PARM(5)
CLKin
CLKDEF
CLKRST
SCL
SDA
SDAA
RA1901 100Ω
RA1902 100Ω
A
B
C
D
E
F
G
H
1
2
3
4
5

4.22 GR CIRCUIT BOARD

— FOIL SIDE (B) —


LPA10041
10 CN1902 GR PWB ASS'Y
1
2
3
R1996
IC1906
C1987
C1985
C1923
Q1922
R1995
R1934
LC1901
R1964
L1943
R1960
R1978
C1964
C1962
C1939
C1983
X1941
C1945
C1989
C1970
CF1941
R1979
C1988
C1960
C1941
R1947
D1943
C1994
C1953
C1952
C1951
IC1905
R1931
C1976
C1993
L1931
L1942
K1932
C1936
C1927
C1937
C1981
C1910
C1916
C1911 C1912 C1915
C1914
C1909
D1901
C1925
K1931
C1926
IC1904
K1901
R1913
D1924
D1923
UL MARK
C1901
C1902
R1901
R1903
LPB10041 -001C
GR PWB
A
B
C
D
E
1
2
3
4
5

— COMPONENT SIDE (A) —


R1990
C1923
IC1906
C1921
Q1922
CN1902
R1989
C1985
IC1907
C1983
LC1901
C1968
C1975
R1981
C1964
X1941
C1962
C1940
IC1901
C1939
C1973
C1960
C1992
C1963
C1969
C1967
CF1941
Q1948
R1959
L1943
Q1950
Q1951
C1986
C1957
Q1947
C1970
C1945
Q1943
R1946
L1945
Q1954
C1941
Q1942
Q1941
C1994
C1993
RA1902
RA1901
R1991
R1985
C1971
R1987
R1988
C1979
C1930
C1950
C1953
C1928
L1931
C3
C1981
RA1932
C1927
IC1902
K1932
RA1931
C1933
C1931
C1901
C1926
C1925
K1931
D1924
D1923
R1911
R1925
R1924
R1923
R1918
R1919
R1914
R1912
Q1901
R1910 R1909
R1908 R1904 IC1903
K1901
A
B
C
D
E
1
2
3
4
5

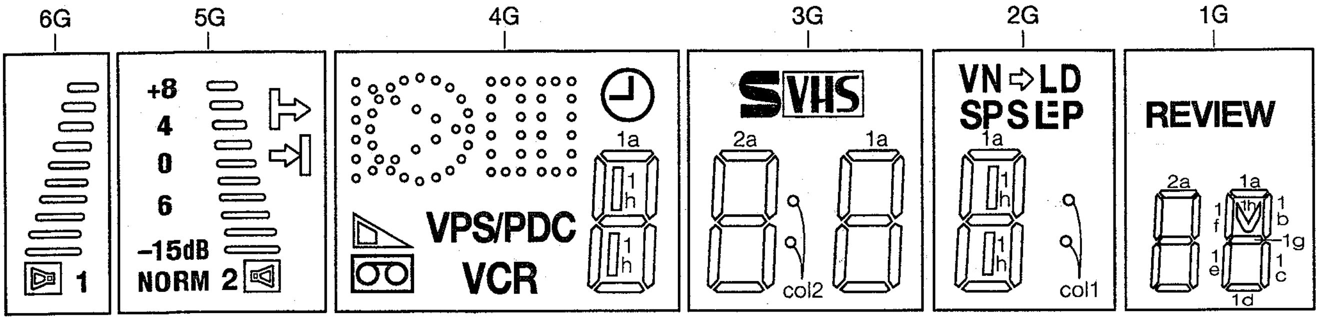
COMPONENT PARTS LOCATION GUIDE (GR)

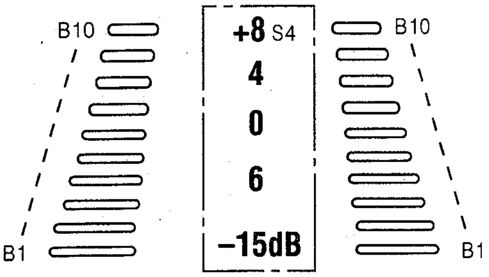
REF.NO.	LOCATION		
CAPACITOR			
C1901	A	D	2B
C1902	A	D	3A
C1903	B	C	3B
C1904	B	C	3B
C1905	B	C	3B
C1906	B	C	3A
C1907	B	C	3B
C1908	B	C	4B
C1909	B	C	3B
C1910	B	C	3C
C1911	B	C	3B
C1912	B	C	4B
C1913	B	C	4B
C1914	B	C	4B
C1915	B	C	4B
C1916	B	C	4C
C1917	B	C	4B
C1918	B	C	4B
C1919	B	C	2E
C1920	B	C	2E
C1921	A	D	3F
C1922	B	C	3E
C1923	A	D	5F
C1924	B	C	1B
C1925	A	D	1B
C1926	A	D	2B
C1927	A	D	1B
C1928	A	D	2C
C1929	B	C	2C
C1930	A	C	2C
C1931	A	C	2B
C1932	B	C	2C
C1933	A	C	2B
C1934	B	C	2B
C1935	B	C	2C
C1936	B	C	1C
C1937	B	C	2C
C1938	B	C	3F
C1939	A	D	5E
C1940	A	C	5D
C1941	A	D	1D
C1942	A	C	1D
C1943	B	C	1D
C1944	B	C	1D
C1945	A	D	2D
C1946	B	C	2D
C1947	B	C	1D
C1948	B	C	1D
C1949	B	C	2D
C1950	A	C	2C
C1951	B	C	2D
C1952	B	C	1C
C1953	A	D	1C
C1954	B	C	2E
C1955	B	C	2E
C1956	B	C	2E
C1957	A	D	2E
C1958	B	C	1E
C1959	B	C	2D
C1960	A	D	5D
C1961	B	C	5D
C1962	A	D	5E
C1963	A	C	4D
C1964	A	D	4E
C1965	B	C	3D
C1966	B	C	3D
C1967	A	C	3D
C1968	A	C	3D
C1969	A	C	3D
C1970	A	D	3D
C1971	A	C	3C
C1972	B	C	3C
C1973	A	C	4D
C1974	B	C	5D
C1975	A	C	3D
C1976	B	C	4C
C1977	A	C	4C
C1978	B	C	4C
C1979	A	D	2C
C1980	B	C	2D
C1981	A	D	3C
C1982	B	C	3C
C1983	A	D	1E
C1984	B	C	1E
C1985	A	D	1F
C1986	A	D	1E
C1987	B	C	1F
C1988	B	C	4D
C1989	B	C	4D
C1990	B	C	4D
C1991	B	C	4D
C1992	A	C	4D
C1993	A	D	5C
C1994	A	D	5D
C1995	B	C	4D
C1996	B	C	4D
C1997	B	C	2E
C1998	B	C	2F
C1999	B	C	3E
CONNCTOR			
CN1902	A	D	3F
DIODE			
D1901	B	C	3B
D1923	A	D	1A
D1924	A	D	1B
D1941	A	C	1D
D1943	B	C	3C
D1944	B	C	5C
IC			
IC1901	A	C	4D
IC1902	A	C	2C
IC1903	A	C	4B
IC1904	B	C	2B
IC1905	B	C	2C
IC1906	A	D	5F
IC1907	A	C	1F
COIL			
L1931	A	D	1C
L1941	A	D	2D
L1942	A	D	1C
L1943	A	D	2E
L1944	A	D	2D
L1945	A	D	1D

REF.NO.	LOCATION		
TRANSISTOR			
Q1901	A	C	5B
Q1922	A	D	4F
Q1941	A	C	1D
Q1942	A	C	1D
Q1943	A	C	2D
Q1944	A	C	2D
Q1945	B	C	5C
Q1946	A	C	3E
Q1947	A	C	3E
Q1948	A	C	2E
Q1949	A	C	2E
Q1950	A	C	2E
Q1951	A	C	1E
Q1952	A	C	1E
Q1953	A	C	1D
Q1954	A	C	1D
Q1955	A	C	2D
RESISTOR			
R1901	B	C	3A
R1902	B	C	4A
R1903	B	C	4A
R1904	A	C	4A
R1905	A	C	3C
R1906	A	C	3C
R1907	B	C	4B
R1908	A	C	4A
R1909	A	C	4A
R1910	A	C	5A
R1911	A	C	5C
R1912	A	C	5B
R1913	B	C	5B
R1914	A	C	5B
R1915	B	C	5B
R1916	B	C	5B
R1917	B	C	5B
R1918	A	C	5B
R1919	A	C	5B
R1920	B	C	5B
R1921	B	C	5C
R1922	B	C	5C
R1923	A	C	5B
R1924	A	C	5B
R1925	A	C	5B
R1926	A	C	4C
R1931	B	C	3C
R1932	B	C	3C
R1934	B	C	3E
R1935	A	C	5E
R1936	A	C	5E
R1937	B	C	3E
R1938	B	C	3F
R1939	B	C	2E
R1940	B	C	2E
R1941	A	C	1D
R1942	B	C	1D
R1943	B	C	1D
R1944	B	C	1D
R1945	B	C	1D
R1946	A	C	1D
R1947	B	C	2D
R1948	A	C	2D
R1949	B	C	1C
R1950	B	C	2C
R1951	A	C	2D
R1952	A	C	2C
R1953	B	C	1C
R1954	B	C	1C
R1955	B	C	5C
R1956	A	C	5D
R1957	B	C	3E
R1958	B	C	2E
R1959	A	C	3E
R1960	B	C	3E
R1961	A	C	2E
R1962	B	C	2E
R1963	B	C	2E
R1964	B	C	1E
R1965	B	C	1E
R1966	B	C	1E
R1967	B	C	2E
R1968	A	C	2D
R1969	B	C	1D
R1970	B	C	1D
R1971	B	C	2D
R1972	B	C	1D
R1973	B	C	2D
R1974	B	C	5D
R1975	B	C	4D
R1976	B	C	3F
R1977	B	C	4D
R1978	B	C	4D
R1979	B	C	3D
R1980	B	C	3D
R1981	A	C	3D
R1982	A	C	3D
R1983	B	C	3E
R1984	B	C	3E
R1985	A	C	3C
R1986	A	C	3C
R1987	A	C	3C
R1988	A	C	3C
R1989	A	C	1E
R1990	A	C	5F
R1991	A	C	3C
R1992	B	C	3C
R1993	A	C	4D
R1994	A	C	5D
R1995	B	C	4E
R1996	B	C	5F
R1997	A	C	4C
R1998	B	C	4C
R1999	B	C	1E
OTHER			
CF1941	A	D	3D
K1901	A	D	2B
K1931	A	D	1B
K1932	A	D	1C
LC1901	A	D	5E
RA1901	A	C	4C
RA1902	A	C	4C
RA1931	A	C	2B
RA1932	A	C	2C
X1941	A	D	4E

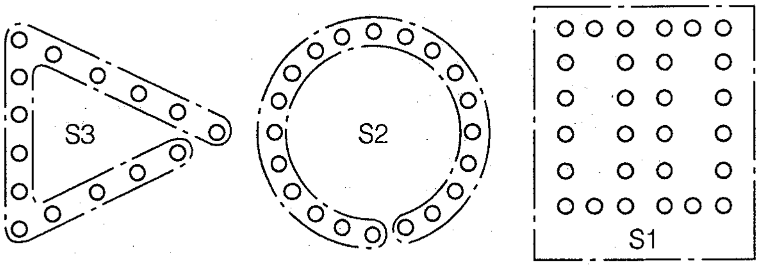
4.23 FDP GRID ASSIGNMENT AND ANODE CONNECTION

GRID ASSIGNMENT


6G
5G
4G
3G
2G
1G
1
+8
4
0
6
-15dB
NORM
2
VPS/PDC
VCR
1a
1
h
SVHS
2a
1a
col2
VN⇨LD
SPSL:P
1a
col1
REVIEW
2a
1a
1 f
1h
1 b
1g
1 e
1 c
1d


B10
+8 S4
4
0
6
-15dB
B10
B1
B1

(6G, 5G)



(4G)

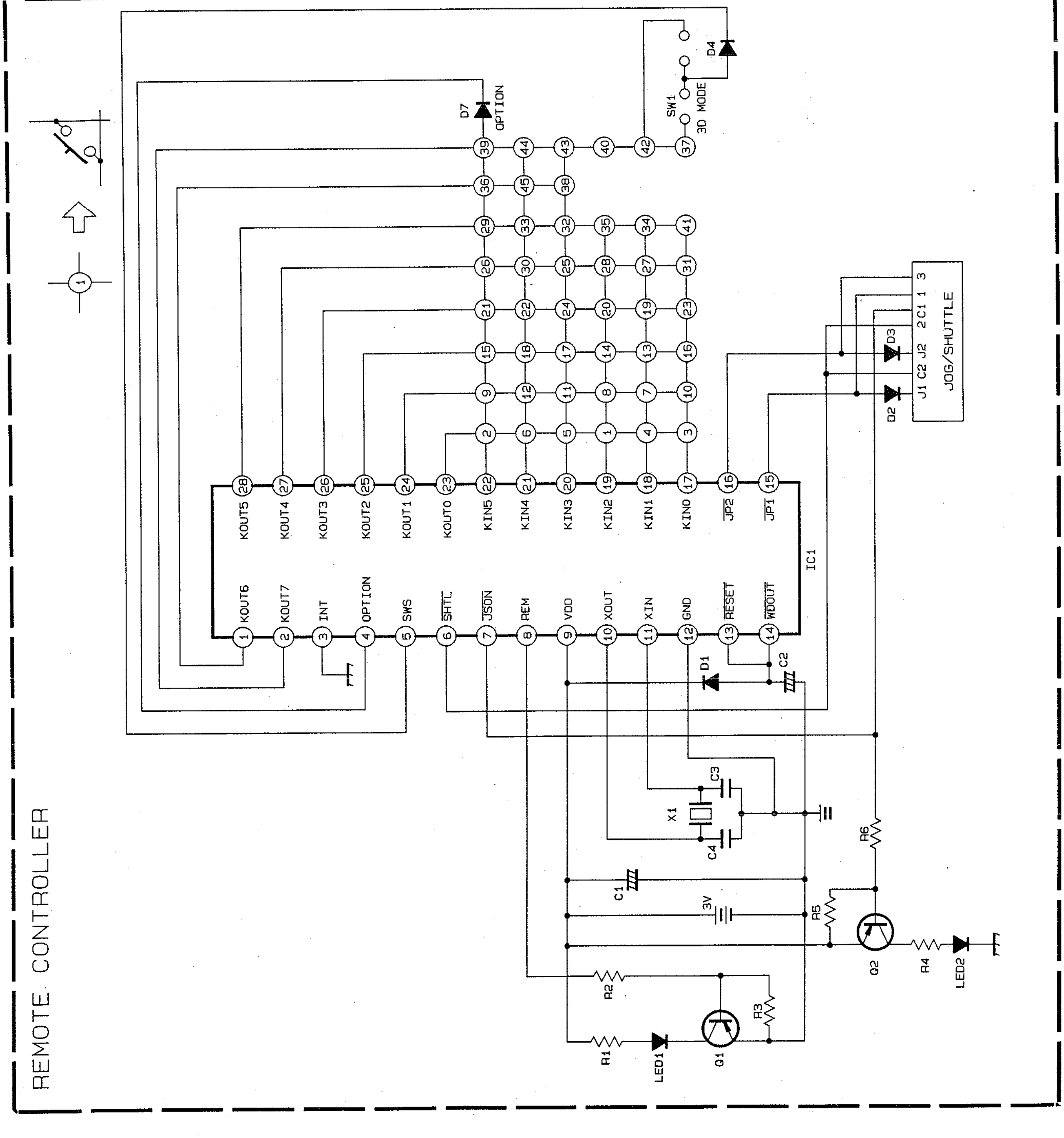
ANODE CONNECTION

	6G	5G	4G	3G	2G	1G
P 1	—	↦	S2	1a	1a	1a
P 2	—	⇥	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	◷	1c	1c	1c
P 6	▷	◁	◺	1e	1e	1e
P 7	B10	B10	📼	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	⇨	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S (SEP)	2e
P15	B2	B2	1d	2d	: (SEP)	2d
P16	B1	B1	1h	SVHS	LP(SEP)	REVIEW

4.24 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

Key No.	Key Name
1	AUDIO/MUTE
2	POWER
3	RE-VIEW
4	TV/VCR
5	ENTER
6	DISPLAY
7	1
8	2
9	3
10	4
11	5
12	6
13	7
14	8
15	9
16	CANCEL(1-)
17	0
18	TIMER(2-)
19	START+
20	STOP+
21	DATE+
22	PROG(CH)+
23	START-
24	STOP-
25	DATE-
26	PROG(CH)-
27	PROG
28	PROG CHECK
29	SP/EP(-/--)
30	SKIP
31	REW
32	PLAY
33	FF
34	REC
35	STOP
36	PAUSE
37	<</TV VOL-
38	Δ/TV PROG+
39	>>TV VOL+
40	∇/TV PROG-
41	MENU
42	A/B
43	C.MEMORY
44	OK
45	JOG/SHUTTLE
34+32	REC+START
34+36	REC+PAUSE



REMOTE CONTROLLER
IC1
KOUT5
KOUT4
KOUT3
KOUT2
KOUT1
KOUT0
KIN5
KIN4
KIN3
KIN2
KIN1
KIN0
JP2
JP1
KOUT6
KOUT7
INT
OPTION
SWS
SHTL
JSON
REM
VDD
XOUT
XIN
GND
RESET
WDOUT
D7
OPTION
D4
SW1
3D MODE
J1 C2 J2 2C1 1 3
JOG/SHUTTLE
D2
D3
D1
C2
C3
X1
C4
C1
3V
R5
R6
Q2
R4
LED2
R2
R3
R1
LED1
Q1

4.25 VOLTAGE CHARTS

<VIDEO/N.AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	2.5	2.5
2	2.5	2.5
3	0	0
4	2.3	2.5
5	0	0
6	2.8	2.8
7	2.5	2.5
8	2.5	2.5
9	2.5	2.5
10	2.5	2.5
11	2.5	2.5
12	4.9	4.9
13	1.9	1.5
14	1.9	1.5
15	2.6	3.1
16	1.6	0.8
17	0.3	0.3
18	2.3	2.2
19	3.0	3.0
20	2.8	2.8
21	2.3	2.3
22	1.9	1.9
23	3.0	3.0
24	2.2	2.2
25	1.4	1.5
26	2.1	2.1
27	0	0
28	5.0	4.9
29	1.8	1.9
30	4.0	4.0
31	2.8	2.8
32	0	0
33	0	0
34	0	0
35	3.2	3.2
36	4.9	4.9
37	4.9	4.9
38	4.9	5.0
39	3.2	3.2
40	4.9	4.9
41	4.9	4.9
42	1.9	2.0
43	5.0	4.9
44	2.6	2.6
45	0	0
46	2.0	2.0
47	0	0
48	0	0
49	0	0
50	0.4	0.4
51	0	0
52	1.4	2.4
53	3.0	2.8
54	2.0	2.0
55	2.1	2.1
56	2.8	2.3
57	4.9	4.9
58	3.2	3.2
59	3.2	3.1
60	2.1	2.1
61	4.9	4.9
62	4.6	4.6
63	4.6	4.6
64	0	0
65	0	0
66	4.9	4.9
67	4.9	4.9
68	0	0
69	2.8	2.8
70	2.5	2.5
71	-	-
72	2.3	2.2
73	-	-
74	2.6	1.0
75	0.5	0.5
76	2.5	2.5
77	0	0
78	2.7	2.8
79	4.0	2.1
80	0	0
81	2.5	2.5
82	1.2	1.2
83	2.5	2.5
84	0	1.1
85	0	0
86	2.3	2.2
87	2.3	2.2
88	2.3	2.2
89	2.3	2.2
90	4.9	5.0
91	0	0
92	0	0
93	0	0
94	0	0
95	0.5	0.5
96	4.9	5.0
97	0	0
98	4.3	4.3
99	0.5	2.6
100	2.5	2.5
IC2		
1	2.7	2.7
2	0	0
3	2.7	2.7
4	4.9	0
5	2.7	2.7
6	4.9	4.9
7	2.0	2.0
8	0	0
Q13		
E	3.0	2.0
C	3.1	2.9
B	3.8	2.7
Q14		
E	2.4	2.4
C	4.9	4.9
B	3.0	3.0
Q15		
E	3.0	3.0
C	0	0
B	2.4	2.4
Q16		
E	5.0	5.0
C	4.9	0
B	0.2	4.9
Q17		
E	0	0
C	0	0
B	4.0	4.0
Q18		
E	0	0
C	0	0
B	4.0	4.0
Q21		
E	0	0
C	0.5	0.5
B	0	0
Q45		
E	2.6	2.6
C	0	0
B	2.0	2.0
Q49		
E	2.1	2.1
C	4.9	4.9
B	2.7	2.7
Q53		
E	0	0
C	3.4	3.5
B	0	0
Q101		
E	0	0
C	0	0
B	4.8	4.8
Q152		
E	3.8	2.7
C	0	0
B	4.1	2.1
Q159		
E	1.6	1.6
C	4.9	4.9
B	2.2	2.2
Q401		
E	11.6	11.6
C	11.5	0
B	10.8	11.5
Q402		
E	0	0
C	0	11.5
B	4.8	0
Q403		
E	0	0
C	0	0.3
B	4.8	0
Q404		
E	7.8	0
C	0	0
B	7.2	0
Q405		
E	9.9	0
C	0	0
B	9.3	0
Q2001		
E	-18.6	0
C	0	0
B	-24.7	0.7
Q2002		
E	-18.6	0
C	0	0
B	-24.5	0.7
Q2003		
E	4.9	4.9
C	-24.7	4.9
B	4.9	0
Q2051		
E	0	0
C	7.9	0.2
B	0	0.2
Q2052		
E	11.6	11.6
C	11.3	0.7
B	10.8	11.5
Q2053		
E	0	0
C	0	11.5
B	4.7	0
Q2054		
E	11.3	0.7
C	11.1	0
B	10.5	0.7
Q2055		
E	0	0
C	0	0.7
B	4.8	0
Q2061		
E	0	0
C	8.1	0
B	0	0
Q2062		
E	11.3	0.7
C	11.2	0
B	10.5	0.7
Q2063		
E	0	0
C	0	0.7
B	4.8	0
Q2102		
E	0	0
C	0	0
B	4.9	4.9
Q2103		
E	1.8	1.8
C	4.9	4.9
B	2.5	2.5
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.4	2.2
6	2.4	2.2
7	2.3	2.2
8	2.3	2.2
9	2.5	0
10	2.5	0
11	2.5	0
12	0	0
13	0	0
CN101		
1	0	0
2	2.4	2.4
3	4.6	4.6
4	2.4	2.4
5	4.7	4.7
6	0	0
7	0	0
8	0	0
9	0.5	0.5
10	0	0
11	0	0
12	0	0
13	4.9	4.9
14	4.9	4.9
15	0	0
16	0	0
17	0	0
18	0	0
19	2.6	2.6
20	0	0
21	0	0
22	2.1	2.1
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	3.4	3.4
30	0	0
CN102		
1	0	0
2	0	0
3	0.5	0.6
4	0	0
5	0	0
6	0	0
7	0.8	0.8
8	1.9	1.9
9	1.3	2.4
10	4.8	4.8
11	2.2	2.4
12	4.0	4.0
13	0	0
14	0	0
15	2.3	2.3
16	0	0
17	4.7	4.7
18	4.7	4.7
19	4.9	4.9
20	4.9	4.9
21	2.3	2.3
22	0	0
23	2.3	2.3
24	0	0
25	0	0
26	2.8	2.8
27	11.6	11.6
28	3.0	3.0
29	0	0
30	2.8	2.8
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.2	2.5
7	2.4	2.5
CN2002		
1	0	0
2	0	0

<ON SCREEN>

MODE PIN NO.	REC	PLAY
IC201		
1	0	0
2	2.6	2.6
3	4.8	4.8
4	0	0
5	0	0
6	2.4	2.4
7	2.4	2.4
8	5.0	5.0
9	3.2	3.2
10	4.4	4.4
11	1.2	1.2
12	5.0	5.0
13	2.3	2.
14	0	[illegible]
15	2.3	2.3
16	5.0	5.0
17	2.9	2.9
18	3.6	3.6
19	5.0	5.0
20	5.0	5.0
21	5.0	5.0
22	4.9	4.9
23	5.0	5.0
24	5.0	5.0
Q203		
E	4.9	4.9
C	5.0	5.0
B	4.8	4.
Q207		
E	3.0	3.0
C	0	0
B	2.4	2.5
Q208		
E	2.4	2.5
C	5.0	5.0
B	3.0	3.0
Q211		
E	-	-
C	0	0
B	-	-

<FMA>

MODE PIN NO.	REC	PLAY
IC2201		
1	2.3	2.4
2	0	0
3	2.4	2.4
4	0	0
5	0	0
6	2.5	2.5
7	2.0	2.0
8	0	0
9	0	0
10	0	0
11	0	0
12	2.0	2.0
13	0	0
14	0	0
15	0	0
16	2.5	2.
17	0.5	0.
18	2.5	2.5
19	2.5	2.5
20	2.5	0.2

MODE PIN NO.	REC	PLAY
21	2.5	0
22	2.5	0.6
23	0	0
24	2.5	0.7
25	4.9	5.0
26	2.6	0
27	0	2.4
28	4.2	2.7
29	4.6	1.8
30	4.6	1.8
31	1.0	1.8
32	2.5	2.4
33	2.5	2.5
34	0.7	0.7
35	2.5	2.5
36	0	0.2
37	1.6	1.6
38	0	0
39	0	0
40	4.9	4.9
41	0	0
42	4.8	4.6
43	4.7	4.6
44	3.2	3.2
45	0	0
46	4.8	4.8
47	2.5	2.4
48	2.5	2.5
49	3.4	3.3
50	1.2	1.2
51	0	0
52	0	0
53	4.4	4.4
54	0	0
55	0	0
56	0	0
57	4.5	4.5
58	10.0	10.0
59	4.5	4.5
60	0.6	0.8
61	2.5	2.5
62	2.4	2.4
63	4.5	4.5
64	4.6	4.6
Q2151		
E	4.9	4.9
C	4.9	4.9
B	2.1	2.1
Q2152		
E	4.9	4.9
C	4.9	4.9
B	0	0
Q2201		
E	0	0
C	0	0
B	-0.4	-0.4
Q2202		
E	0	0
C	0	0
B	-0.4	0
Q2203		
E	5.0	5.0
C	-0.4	0
B	5.0	5.0
Q2204		
E	0	0
C	5.0	5.0
B	0	0
Q2254		
E	0	0
C	0	0
B	0	0
Q2255		
E	0	0
C	0	0
B	4.2	4.2
Q2256		
E	0	0
C	4.2	4.2
B	0	0
Q2257		
E	0	0
C	4.2	4.2
B	0	0
Q2258		
E	4.7	0
C	4.6	1.8
B	0.2	4.9

<SYSTEM CONTROL>

MODE PIN NO.	REC	PLAY
IC3001		
1	2.8	2.5
2	0	0
3	1.8	2.5
4	2.5	2.5
5	2.5	2.5
6	2.6	2.6
7	2.5	2.5
8	2.5	2.5
9	5.0	5.0
10	4.9	5.0
11	0	0
12	4.9	4.9
13	0	1.0
14	4.7	4.0
15	4.5	4.5
16	1.2	1.2
17	0	0
18	4.9	4.9
19	3.4	3.4
20	2.4	2.4
21	0	0.7
22	4.2	2.7
23	0	0
24	4.9	4.9
25	0	0
26	5.0	4.8
27	5.0	4.8
28	5.0	5.0
29	5.1	5.1
30	0.5	0.5
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	4.9	5.0
38	0.3	0.3
39	4.8	4.8
40	0	0
41	5.0	5.0
42	4.7	4.5
43	0	0
44	0	0
45	5.0	5.0
46	0	0
47	4.2	4.2
48	4.3	4.3
49	4.7	4.7
50	4.6	4.6
51	5.0	5.0
52	0.8	0.8
53	4.6	4.6
54	-	-
55	-	-
56	0	0
57	0.2	0
58	1.2	1.2
59	0	0
60	0	0
61	0	0
62	0	0
63	0	0
64	-	-
65	-	-
66	-	-
67	-	-
68	0	0
69	-	-
70	5.0	5.0
71	5.0	5.0
72	4.8	4.8
73	0	0
74	0	0
75	4.9	4.9
76	4.9	4.7
77	0	0
78	0	0
79	5.0	4.8
80	0	0
81	5.0	5.0
82	4.9	4.9
83	2.4	2.4
84	0	0
85	0	0
86	5.0	5.0
87	4.9	0
88	4.9	0
89	0	0
90	0	0
91	3.0	3.0
92	5.0	5.0
93	5.0	5.0
94	5.0	5.0
95	5.0	0
96	0	0
97	5.0	5.0
98	0.2	0.3
99	0	2.5
100	2.5	2.5
101	2.6	2.6
102	1.2	1.3
103	4.9	4.9
104	0	0
105	5.0	5.0
106	0	0
107	0	0
108	1.5	1.6
109	5.0	5.0
110	0	0
111	0	0
112	2.5	2.5
IC3002		
1	4.9	4.9
2	4.9	4.9
3	0	0
IC3003		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.7	4.7
6	4.7	4.7
7	0	0
8	5.0	5.0
IC3004		
1	0	0
2	12.3	12.3
3	0.4	0.4
4	0	0
5	0	0
6	12.3	12.3
7	0.4	0.4
8	12.3	12.3
9	0	0
IC3301		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	0	0
5	0	0
6	3.5	3.5
7	5.0	5.0
8	5.0	0
9	0	0
10	0	0
11	5.0	5.0
12	5.0	5.0
13	4.4	4.4
14	4.2	4.2
15	0	0
16	0	0
17	0	0
18	4.9	4.9
19	-	-
20	-	-
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	4.9	0
32	5.0	0
33	5.0	5.0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	0
39	5.0	5.0
40	0	0
41	0	0
42	0	0
IC3501		
1	0	0
2	12.3	12.3
3	0.4	0.4
4	0	0
5	0	0
6	12.3	12.3
7	0.4	0.4
8	3.4	3.4
9	0	0
Q3001		
E	0	0
C	12.3	12.3
B	0	0
Q3002		
E	0	0
C	4.9	4.7
Q3003		
E	0	0
C	4.7	4.7
Q3004		
E	0	0
C	0	0
B	0.7	0.7
Q3005		
E	5.0	5.0
C	5.7	5.7
B	5.6	5.6
Q3009		
E	0	0
C	0	0
B	0	0
Q3501		
E	3.4	3.4
C	3.4	3.4
B	4.0	4.0
Q4001		
E	0	0
C	0	0
B	4.9	4.9
CN3001		
1	12.3	12.3
2	0	0
3	1.4	1.4
4	0	0
5	1.5	1.5
CN3002		
1	0.3	0.5
2	0.4	0.4
CN3003		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	4.9	4.9
7	0	0
8	12.3	12.3
CN3004		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	0	0
CN3011		
1	5.1	5.1
2	0	0
3	5.0	5.0
4	5.0	5.0
5	4.5	4.5
6	5.0	5.0
7	0.8	0.8
8	4.7	4.7
9	5.1	5.1
10	0	0
11	0	0
12	-19.4	-19.1
13	-15.4	-15.2
14	-28.3	-28.1
CN3012		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	0	0
5	5.0	4.8
6	0	0
CN3401		
1	0	0
2	0	0
3	5.0	5.0
4	1.2	1.2
5	4.9	4.9
6	4.9	4.9
7	2.3	2.3
8	1.8	1.8
9	2.5	2.5
10	0.6	0.6
CN3501		
1	0	0
2	0	0
3	0	0
4	5.0	5.0
5	0	0
6	0	0

<SW. REG>

MODE PIN NO.	REC	PLAY
IC5301		
1	5.8	5.8
2	5.0	5.0
3	4.8	4.8
4	0	0
5	12.3	12.3
6	11.6	11.6
7	12.3	12.3
8	1.2	1.2
9	1.2	1.2
10	11.0	11.0
Q5101		
S	0	0
D	109.7	107.4
G	-	-
Q5102		
E	0	0
C	-	-
B	-	-

<TUNER>

MODE PIN NO.	REC	PLAY
Q6030		
E	2.3	2.3
C	0	0
B	1.6	1.6
Q6501		
E	0	0
C	0	0
B	4.0	4.0
Q6502		
E	0	0
C	0	0
B	4.1	4.1
Q6551		
E	9.0	8.9
C	11.6	11.6
B	9.7	9.6
CN6701		
1	1.2	1.2
2	4.7	4.7
3	4.7	4.7
4	4.1	4.1
5	0	0
6	0	0
7	9.0	8.9
8	0	0
9	1.8	1.8

<C.BOX CTL>

MODE PIN NO.	REC	PLAY
Q7201		
E	0	0
C	5.0	5.0
B	0	0
CN1901		
1	1.0	1.0
2	0	0
3	2.3	2.3
4	0	0
5	4.8	4.8
6	4.8	4.8
7	0	0
8	0	0
9	4.7	4.7
10	11.6	11.6
11	5.8	5.8
CN7201		
1	0	0
2	0	0
CN7502		
1	4.9	4.9
2	0.3	0.3
3	0	0

<TERMINAL>

MODE PIN NO.	REC	PLAY
Q7507		
E	3.0	3.2
C	0	0
B	2.3	2.5
CN7504		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0

<VSC>

MODE PIN NO.	REC	PLAY
IC2501		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	4.5	2.2
11	5.0	2.6
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	5.0	5.0
19	0	1.4
20	5.0	5.0
21	0	0
22	0	0
23	0	0
24	5.0	5.0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	5.0	5.0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	2.4	2.5
44	0	0
45	2.5	2.5
46	2.4	2.4
47	2.4	2.4
48	2.5	2.5
49	2.5	2.5
50	2.5	2.5
51	2.5	2.5
52	2.5	2.5
53	5.0	5.0
54	0	0
55	0	0
56	0	0
57	0	0
58	5.0	5.0
59	5.0	5.0
60	5.0	5.0
61	5.0	5.0
62	0	0
63	0	0
64	0	0
Q2501		
E	0	0
C	0	0
B	0	0
Q2502		
E	0	0
C	0	0
B	5.0	5.0

<3D SVHS (VIDEO)>

MODE PIN NO.	REC	PLAY
IC1001		
1	2.9	2.9
2	0.3	4.4
3	2.2	2.2
4	1.8	1.8
5	2.9	3.0
6	2.8	2.8
7	2.3	2.3
8	4.0	4.1
9	2.3	2.3
10	2.9	2.9
11	2.8	2.8
12	2.1	2.5
13	4.5	4.5
14	4.6	4.6
15	2.6	2.6
16	2.8	2.8
17	4.1	4.1
18	2.9	2.1
19	0.3	0.3
20	0	0
21	2.3	2.3
22	2.8	2.8
23	2.3	2.3
24	0	0
25	3.5	3.5
26	2.1	2.1
27	2.7	2.8
28	2.8	2.8
29	2.8	2.8
30	0	0
31	2.8	2.8
32	0	0
33	2.8	2.8
34	4.9	4.9
35	2.8	2.8
36	1.9	1.9
37	3.1	3.1
38	2.9	2.9
39	2.4	2.4
40	2.7	2.8
41	2.9	2.9
42	2.8	2.8
43	3.1	3.1
44	2.3	2.1
45	0	0
46	2.8	2.8
47	1.9	1.1
48	2.8	2.8
49	4.9	4.9
50	2.8	2.8
51	4.9	4.9
52	2.8	2.8
53	1.9	2.1
54	2.6	3.6
55	0	0
56	2.3	2.4
IC1002		
1	2.0	2.0
2	0	4.4
3	3.3	3.3
4	3.3	3.3
5	4.9	4.9
6	2.2	2.2
7	2.0	2.0
8	4.9	4.9
9	1.4	1.4
10	2.9	2.9
11	2.9	2.9
12	2.9	2.9
13	0	0
14	2.8	2.8
15	2.8	2.8
16	1.9	1.9
17	1.9	1.9
18	1.9	1.9
IC1003		
1	1.4	1.4
2	0	0
3	1.5	1.5
4	0	0
5	1.6	1.5
6	5.0	5.0
7	0.7	0.7
8	0	0
IC1005		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	2.8	2.8
13	2.8	2.8
14	0	0
15	0	0
16	5.0	5.0
Q1003		
E	0	0
C	0	0
B	3.6	3.5
Q1011		
E	3.0	3.0
C	0	0
B	2.3	2.3
Q1013		
E	2.8	2.8
C	0	0
B	2.1	2.1
Q1016		
E	0	0
C	0	0
B	4.8	4.8
Q1021		
E	3.0	3.0
C	0	0
B	2.4	2.4
Q1022		
E	0	0
C	4.2	0
B	0.3	4.3
CN1001		
1	0	0
2	2.4	2.4
3	4.6	4.6
4	2.4	2.4
5	4.7	4.7
6	0	0
7	0	0
8	0	0
9	0.5	0.5
10	0	
11	0	0
12	0	0
13	4.9	4.9
14	4.9	4.9
15	0	0
16	0	0
17	0	0
18	0	0
19	2.6	2.6
20	0	0
21	0	0
22	2.1	2.1
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	3.4	3.4
30	0	0
CN1002		
1	0	0
2	0	0
3	0.5	0.6
4	0	0
5	0	0
6	0	0
7	0.8	0.8
8	1.9	1.9
9	1.3	2.4
10	4.8	4.8
11	2.2	2.4
12	4.0	4.0
13	0	0
14	0	0
15	2.3	2.3
16	0	0
17	4.7	4.7
18	4.7	4.7
19	4.9	4.9
20	4.9	4.9
21	2.3	2.3
22	0	0
23	2.3	2.3
24	0	0
25	0	0
26	2.8	2.8
27	11.6	11.6
28	3.0	3.0
29	0	0
30	2.8	2.8
CN1004		
1	0	0
2	0	0
3	0	0
4	0	0

<3D SVHS (3D/TBC)>

MODE PIN NO.	REC	PLAY
IC1401		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-

MODE PIN NO.	REC	PLAY
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	-	-
45	-	-
46	-	-
47	-	-
48	-	-
49	-	-
50	-	-
51	-	-
52	-	-
53	-	-
54	-	-
55	-	-
56	-	-
57	-	-
58	-	-
59	-	-
60	-	-
61	-	-
62	-	-
63	-	-
64	-	-
65	-	-
66	-	-
67	-	-
68	-	-
69	-	-
70	-	-
71	-	-
72	-	-
73	-	-
74	-	-
75	-	-
76	-	-
77	-	-
78	-	-
79	-	-
80	-	-
81	-	-
82	-	-
83	-	-
84	-	-
85	-	-
86	-	-
87	-	-
88	-	-
89	-	-
90	-	-
91	-	-
92	-	-
93	-	-
94	-	-
95	-	-
96	-	-
97	-	-
98	-	-
99	-	-
100	-	-
IC1402		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
IC1403		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
Q1401		
E	-	-
C	-	-
B	-	-
Q1402		
E	-	-
C	-	-
B	-	-
Q1403		
E	-	-
C	-	-
B	-	-
Q1404		
E	-	-
C	-	-
B	-	-
Q1405		
E	-	-
C	-	-
B	-	-
Q1406		
E	-	-
C	-	-
B	-	-
Q1407		
E	-	-
C	-	-
B	-	-
Q1408		
E	-	-
C	-	-
B	-	-
Q1409		
E	-	-
C	-	-
B	-	-
Q1410		
E	-	-
C	-	-
B	-	-
Q1411		
E	-	-
C	-	-
B	-	-
Q1412		
E	-	-
C	-	-
B	-	-
Q1413		
E	-	-
C	-	-
B	-	-
Q1414		
E	-	-
C	-	-
B	-	-
Q1416		
E	-	-
C	-	-
B	-	-
Q1417		
E	-	-
C	-	-
B	-	-
Q1418		
E	-	-
C	-	-
B	-	-
Q1419		
E	-	-
C	-	-
B	-	-

<DEMODULATOR>

MODE PIN NO.	REC	PLAY
IC1501		
1	8.9	8.9
2	4.5	4.5
3	4.4	4.4
4	4.4	4.4
5	4.5	4.5
6	4.4	4.4
7	4.4	4.4
8	4.4	4.4
9	5.5	5.5
10	3.2	3.2
11	3.1	3.1
12	4.4	4.4
13	4.4	4.4
14	0	0
15	4.7	4.7
16	4.7	4.7
17	0	0
18	4.3	4.3
19	4.6	4.6
20	4.5	4.5
21	1.3	1.2
22	5.1	5.1
23	5.1	5.1
24	4.4	4.4
25	4.5	4.5
26	4.5	4.5
27	4.5	4.5
28	3.7	3.7
CN1501		
1	1.2	1.2
2	4.7	4.7
3	4.7	4.7
4	4.1	4.1
5	0	0
6	0	0
7	9.0	8.9
8	0	0
9	1.8	1.8

<MV/CM ADV>

MODE PIN NO.	REC	PLAY
IC7401		
1	5.0	5.0
2	1.1	1.1
3	2.9	2.9
4	2.9	2.9
5	2.2	2.2
6	1.1	1.1
7	2.7	3.1
8	0	0
9	0.9	0.9
10	2.9	2.9
11	4.9	4.9
12	1.3	1.3
13	1.3	1.3
14	1.0	1.0
15	2.8	2.8
16	1.3	1.3
17	2.8	2.8
18	0.6	0.6
19	2.9	2.9
20	1.6	1.6
21	3.2	3.2
22	1.6	1.6
23	0	0
24	1.7	1.7
25	4.9	4.9
26	0	0
27	2.3	2.3
28	2.8	2.8
29	2.4	2.4
30	3.0	3.0
31	2.8	2.9
32	2.3	2.3
33	2.7	2.7
34	2.9	2.9
35	0.6	0.6
36	0	0
Q7401		
E	1.2	1.2
C	4.0	4.0
B	1.8	1.8
Q7402		
E	4.7	4.7
C	2.6	2.6
B	4.0	4.0
Q7403		
E	0	0
C	4.2	4.2
B	0.6	0.6
Q7404		
E	0	0
C	0	0
B	4.2	4.2
Q7405		
E	5.0	5.0
C	0	0
B	5.0	5.0
Q7406		
E	5.0	5.0
C	5.0	5.0
B	0.6	0.6
CN7402		
1	0	0
2	0	0
3	5.0	5.0
4	1.2	1.2
5	4.9	4.9
6	4.9	4.9
7	2.3	2.3
8	1.8	1.8
9	2.5	2.5
10	0.6	0.6

<SWITCH/DISPLAY>

MODE PIN NO.	REC	PLAY
IC7001		
1	4.9	4.9
2	2.2	2.2
3	0	0
4	2.2	2.2
5	4.9	4.9
6	4.9	4.9
7	4.9	4.9
8	4.9	4.9
9	4.9	4.9
10	4.9	4.9
11	4.9	4.9
12	4.7	4.7
13	0.8	0.8
14	4.9	5.0
15	4.5	4.5
16	-28.0	-27.9
17	-28.0	-27.9
18	-27.8	-27.6
19	-27.8	-27.7
20	4.7	4.6
21	-23.7	-23.5
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	4.9	4.9
IC7002		
1	5.1	5.1
2	5.1	5.1
3	0	0
CN7001		
1	-28.3	-28.1
2	-15.4	-15.2
3	-19.4	-19.1
4	0	0
5	0	0
6	5.1	5.1
7	4.7	4.7
8	0.8	0.8
9	5.0	5.0
10	4.5	4.5
11	5.0	5.0
12	5.0	5.0
13	0	0
14	5.1	5.1
FW7001		
1	4.9	4.9
2	0	0

<JOG>

MODE PIN NO.	REC	PLAY
CN7005		
1	0	0
2	5.0	5.0
3	0	0
4	0	0
5	5.0	4.8
6	5.0	0

<JACK>

MODE PIN NO.	REC	PLAY
CN7191		
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
CN7192		
1	0	0
2	0	0
3	0	0
4	0	0

<REC SAFETY>

MODE PIN NO.	REC	PLAY
FW7001		
1	4.9	4.9
2	0	0

<JLIP>

MODE PIN NO.	REC	PLAY
CN3951		
1	4.9	4.9
2	0.3	0.3
3	0	0

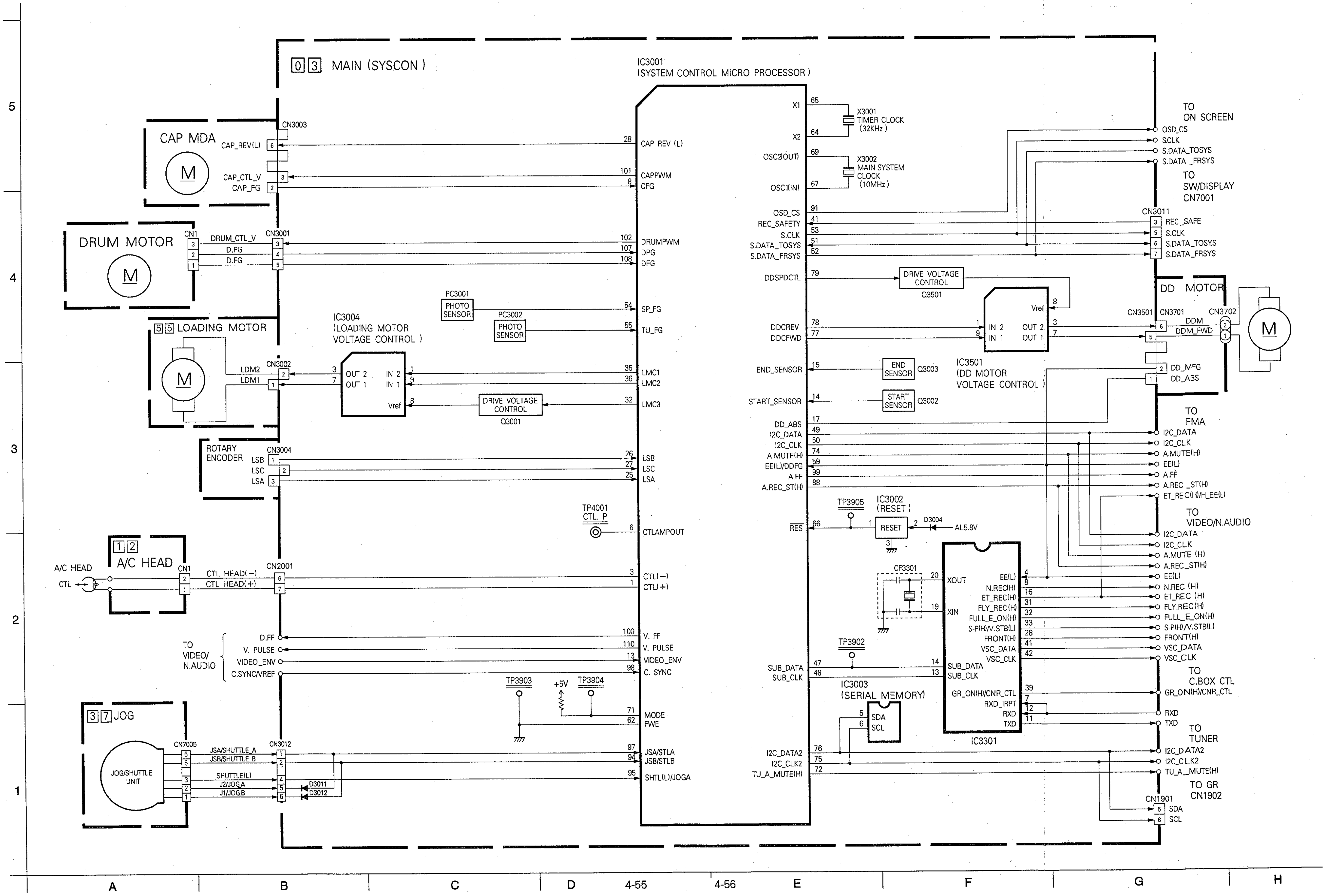
<LANC/C.BOX>

MODE PIN NO.	REC	PLAY
CN7202		
1	0	0
2	0	0

<GR>

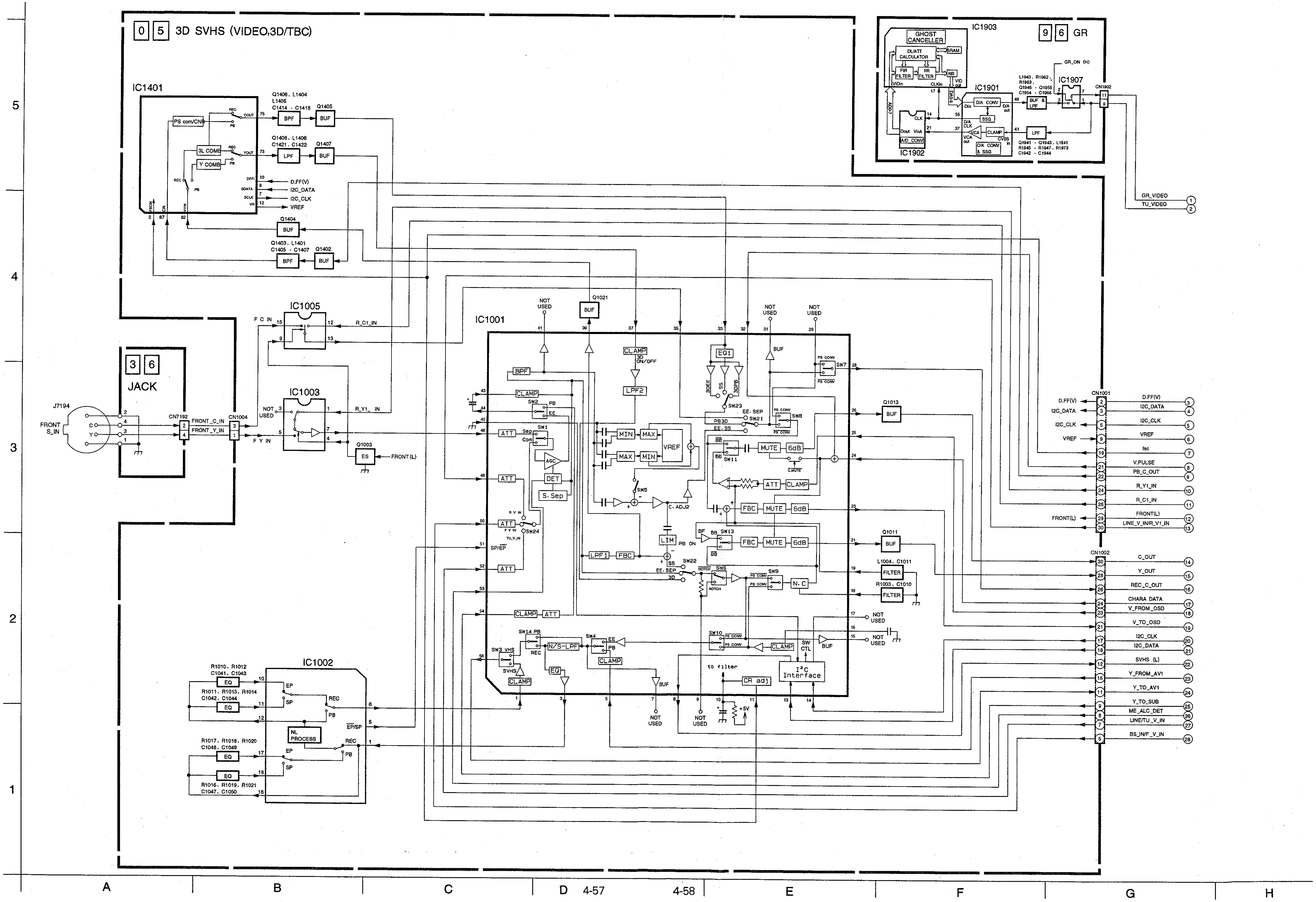
MODE PIN NO.	REC	PLAY
C1901		
1	0	0
2	1.9	1.9
3	1.7	1.7
4	1.7	1.7
5	1.6	1.6
6	1.7	1.7
7	0.9	1.2
8	3.0	3.0
9	0	0
10	0	0
11	4.9	4.9
12	2.2	2.2
13	4.9	4.9
14	4.9	4.9
15	0	0
16	4.6	4.6
17	4.8	4.8
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	3.1	3.1
24	3.0	3.0
25	0	0
26	3.0	3.0
27	2.7	2.7
28	3.4	3.4
29	0	0
30	2.9	2.9
31	3.2	3.2
32	4.2	4.2
33	0	0
34	2.5	2.5
35	4.9	4.9
36	3.5	3.5
37	2.1	2.1
38	1.5	1.5
39	0	0
40	2.3	2.3
41	4.0	4.0
42	1.8	1.8
43	0	0
44	0.9	0.9
45	1.0	1.0
46	4.9	4.9
47	2.1	2.1
48	4.9	4.9
49	0.6	0.6
50	0	0
51	3.6	3.6
52	1.2	1.2
53	1.2	1.2
54	4.9	4.9
55	2.2	2.2
56	0	0
IC1902		
1	5.0	5.0
2	3.4	3.4
3	0	0
4	1.9	1.9
5	1.7	1.7
6	1.7	1.7
7	1.5	1.5
8	1.5	1.5
9	1.4	1.4
10	2.7	2.7
11	0	0
12	0	0
13	3.4	3.4
14	2.2	2.2
15	0	0
16	3.4	3.4
17	0	0
18	5.0	5.0
19	3.5	3.5
20	5.0	5.0
21	2.1	2.1
22	0	0
23	1.5	1.5
24	0	0
IC1903		
1	3.4	3.4
2	0	0
3	0	0
4	0	0
5	0	0
6	4.6	4.6
7	3.4	3.4
8	4.7	4.7
9	3.4	3.4
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	3.4	3.4
17	2.2	2.2
18	0	0
19	3.4	3.4
20	1.6	1.6
21	0	0
22	0	0
23	1.9	1.9
24	1.7	1.7
25	1.7	1.7
26	0	0
27	0	0
28	1.5	1.5
29	3.4	3.4
30	1.5	1.5
31	0	0
32	1.4	1.4
33	2.8	2.8
34	0	0
35	4.8	4.8
36	3.4	3.4
37	4.6	4.6
38	0	0
39	0	0
40	3.4	3.4
41	3.4	3.4
42	0	0
43	0	0
44	3.4	3.4
45	0	0
46	0	0
47	0	0
48	2.8	2.8
49	3.4	3.4
50	1.4	1.4
51	0	0
52	1.5	1.5
53	1.5	1.5
54	1.8	1.8
55	1.7	1.7
56	0	0
57	0	0
58	1.9	1.9
59	3.4	3.4
60	0	0
61	0	0
62	0	0
63	3.4	3.4
64	0	0
65	3.4	3.4
66	0	0
67	3.4	3.4
68	0	0
69	0	0
70	3.4	3.4
71	3.4	3.4
72	0	0
73	3.4	3.4
74	0	0
75	0	0
76	0	0
77	3.4	3.4
78	3.4	3.4
79	3.4	3.4
80	0	0
IC1904		
1	3.4	3.4
2	3.4	3.4
3	0	0
IC1905		
1	4.9	4.9
2	4.9	4.9
3	0	0
IC1906		
1	2.5	2.5
2	0	0
3	5.5	5.5
IC1907		
1	1.7	1.7
2	4.3	4.3
3	1.6	1.6
4	0	0
5	0	0
6	4.9	4.9
7	0.9	0.9
8	0	0
Q1901		
E	0	0
C	4.6	4.6
B	0	0
Q1922		
E	4.9	4.9
C	5.8	5.8
B	5.5	5.5
Q1941		
E	2.0	2.0
C	4.9	4.9
B	2.7	2.7
Q1942		
E	2.1	2.1
C	4.9	4.9
B	2.7	2.7
Q1943		
E	1.7	1.7
C	0	0
B	1.0	1.0
Q1944		
E	1.8	1.8
C	5.0	5.0
B	2.4	2.4
Q1945		
E	1.2	1.2
C	0	0
B	0.5	0.5
Q1946		
E	1.2	1.2
C	4.1	4.1
B	1.9	1.9
Q1947		
E	4.7	4.7
C	1.9	1.9
B	4.1	4.1
Q1948		
E	1.3	1.3
C	5.0	5.0
B	1.9	1.9
Q1949		
E	1.5	1.5
C	0	0
B	0.9	0.9
Q1950		
E	2.2	2.2
C	0	0
B	1.6	1.6
Q1951		
E	1.5	1.5
C	5.0	5.0
B	2.2	2.2
Q1952		
E	4.9	4.9
C	1.4	1.4
B	4.7	4.7
Q1953		
E	0.8	0.8
C	4.9	4.9
B	1.4	1.4
Q1954		
E	0.8	0.8
C	4.7	4.7
B	1.1	1.1
Q1955		
E	1.5	1.5
C	0	0
B	0.8	0.8
CN1902		
1	5.8	5.8
2	11.6	11.6
3	4.7	4.7
4	0	0
5	0	0
6	4.8	4.8
7	4.8	4.8
8	0	0
9	2.3	2.3
10	0	0
11	1.0	1.0

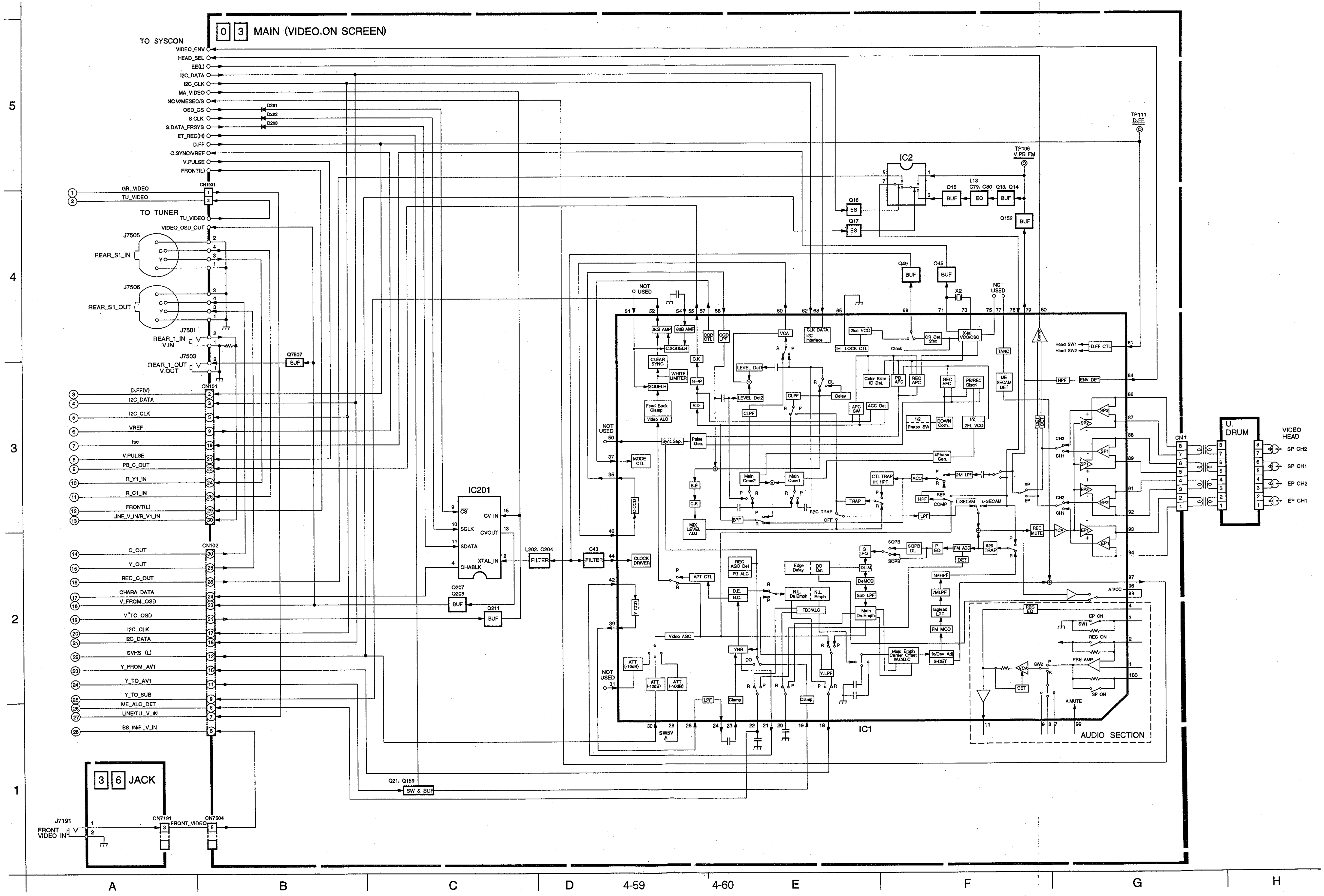
4.26 SYSTEM CONTROL BLOCK DIAGRAM



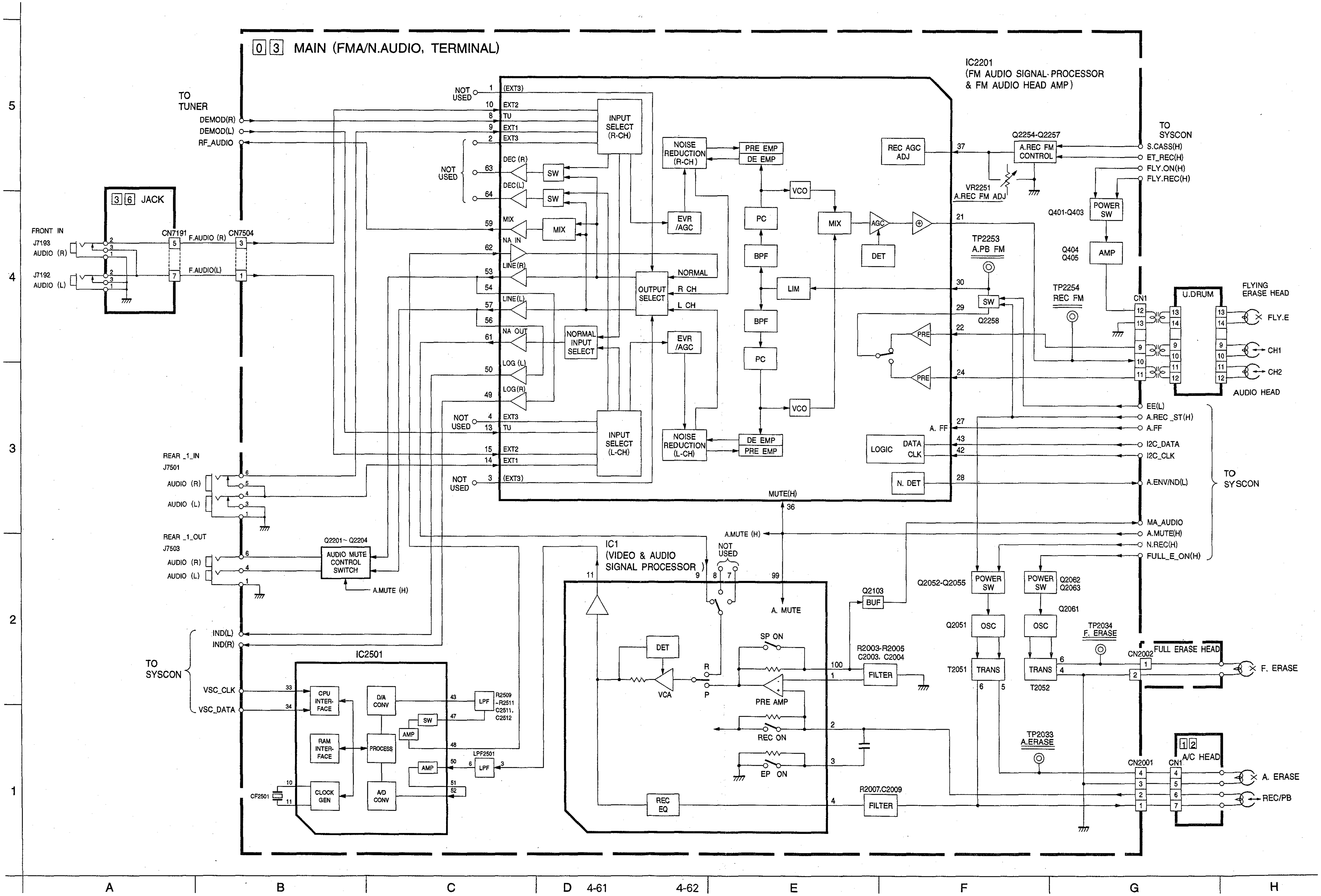
03 MAIN (SYSCON)
IC3001 (SYSTEM CONTROL MICRO PROCESSOR)
CAP MDA
CN3003
CAP_REV(L)
CAP_CTL_V
CAP_FG
28 CAP REV (L)
101 CAPPWM
8 CFG
DRUM MOTOR
CN1
CN3001
DRUM_CTL_V
D.PG
D.FG
102 DRUMPWM
107 DPG
108 DFG
55 LOADING MOTOR
CN3002
LDM2
LDM1
IC3004 (LOADING MOTOR VOLTAGE CONTROL)
OUT 2
OUT 1
IN 2
IN 1
Vref
DRIVE VOLTAGE CONTROL
Q3001
PC3001 PHOTO SENSOR
PC3002 PHOTO SENSOR
54 SP_FG
55 TU_FG
35 LMC1
36 LMC2
32 LMC3
ROTARY ENCODER
CN3004
LSB
LSC
LSA
26 LSB
27 LSC
25 LSA
TP4001 CTL. P
6 CTLAMPOUT
12 A/C HEAD
A/C HEAD
CTL
CN1
CN2001
CTL HEAD(−)
CTL HEAD(+)
3 CTL(−)
1 CTL(+)
TO VIDEO/ N.AUDIO
D.FF
V. PULSE
VIDEO_ENV
C.SYNC/VREF
100 V. FF
110 V. PULSE
13 VIDEO_ENV
98 C. SYNC
TP3903
+5V
TP3904
71 MODE
62 FWE
37 JOG
JOG/SHUTTLE UNIT
CN7005
CN3012
JSA/SHUTTLE_A
JSB/SHUTTLE_B
SHUTTLE(L)
J2/JOG.A
J1/JOG.B
D3011
D3012
97 JSA/STLA
94 JSB/STLB
95 SHTL(L)/JOGA
65 X1
64 X2
X3001 TIMER CLOCK (32KHz)
69 OSC2(OUT)
67 OSC1(IN)
X3002 MAIN SYSTEM CLOCK (10MHz)
91 OSD_CS
41 REC_SAFETY
53 S.CLK
51 S.DATA_TOSYS
52 S.DATA_FRSYS
TO ON SCREEN
OSD_CS
SCLK
S.DATA_TOSYS
S.DATA _FRSYS
TO SW/DISPLAY CN7001
CN3011
REC_SAFE
S.CLK
S.DATA_TOSYS
S.DATA_FRSYS
79 DDSPDCTL
DRIVE VOLTAGE CONTROL
Q3501
78 DDCREV
77 DDCFWD
IC3501 (DD MOTOR VOLTAGE CONTROL)
Vref
IN 2
IN 1
OUT 2
OUT 1
DD MOTOR
CN3501
CN3701
CN3702
DDM
DDM_FWD
DD_MFG
DD_ABS
15 END_SENSOR
END SENSOR Q3003
14 START_SENSOR
START SENSOR Q3002
17 DD_ABS
49 I2C_DATA
50 I2C_CLK
74 A.MUTE(H)
59 EE(L)/DDFG
99 A.FF
88 A.REC_ST(H)
TO FMA
I2C_DATA
I2C_CLK
A.MUTE(H)
EE(L)
A.FF
A.REC _ST(H)
ET_REC(H)/H_EE(L)
TP3905
IC3002 (RESET)
66 RES
RESET
D3004
AL5.8V
TO VIDEO/N.AUDIO
I2C_DATA
I2C_CLK
A.MUTE (H)
A.REC_ST(H)
EE(L)
N.REC (H)
ET_REC (H)
FLY.REC(H)
FULL_E_ON(H)
S-P(H)/V.STB(L)
FRONT(H)
VSC_DATA
VSC_CLK
CF3301
20 XOUT
19 XIN
EE(L)
N.REC(H)
ET_REC(H)
FLY_REC(H)
FULL_E_ON(H)
S-P(H)/V.STB(L)
FRONT(H)
VSC_DATA
VSC_CLK
IC3301
TP3902
47 SUB_DATA
48 SUB_CLK
14 SUB_DATA
13 SUB_CLK
IC3003 (SERIAL MEMORY)
SDA
SCL
GR_ON(H)/CNR_CTL
RXD_IRPT
RXD
TXD
TO C.BOX CTL
GR_ON(H)/CNR_CTL
RXD
TXD
76 I2C_DATA2
75 I2C_CLK2
72 TU_A_MUTE(H)
TO TUNER
I2C_DATA2
I2C_CLK2
TU_A_MUTE(H)
TO GR CN1902
CN1901
SDA
SCL
A
B
C
D
E
F
G
H
1
2
3
4
5

4.27 VIDEO BLOCK DIAGRAM


0 5 3D SVHS (VIDEO,3D/TBC)
9 6 GR
3 6 JACK
IC1401
PS com/CNR
3L COMB
Y COMB
COUT
YOUT
REC
PB
DFFI
SDATA
SCLK
VR
FSCIN
CIN
VYIN
Q1406, L1404
L1405
C1414 - C1418
Q1405
Q1408, L1406
C1421, C1422
Q1407
BPF
LPF
BUF
D.FF(V)
I2C_DATA
I2C_CLK
VREF
Q1404
Q1403, L1401
C1405 - C1407
Q1402
IC1903
GHOST CANCELLER
DL/ATT CALCULATOR
SRAM
FIR FILTER
IIR FILTER
NR
VIDin
CLKin
VID out
IC1901
D/A CONV
SSG
CLAMP
VCA
D/A CONV & SSG
CVBS in
A/D CONV
IC1902
IC1907
GR_ON (H)
L1943, R1962, R1963, Q1945 - Q1955, C1954 - C1956
BUF & LPF
Q1941 - Q1943, L1941, R1945 - R1947, R1973, C1942 - C1944
CN1902
GR_VIDEO
TU_VIDEO
IC1005
F C IN
R_C1_IN
IC1003
NOT USED
R_Y1_ IN
F Y IN
J7194
FRONT S_IN
CN7192
FRONT_C_IN
FRONT_Y_IN
CN1004
Q1003
ES
FRONT (L)
IC1001
Q1021
NOT USED
BPF
CLAMP
LPF2
3D ON/OFF
EQ1
3DEE
SS
3DPB
SW23
EE. SEP
SW21
PB3D
EE. SS
SW7
PS CONV
SW8
Q1013
SW2
SW1
Sep
Com
AGC
DET
S. Sep
ATT
MIN
MAX
VREF
SW5
C. ADJ2
SW11
MUTE
6dB
C.MUTE
FBC
LIM
LPF1
SW24
R V IN
F V IN
TU_V_IN
SP/EP
SW13
BF
BB
PB ON
SW22
EE. SEP
3D
NOTCH
SW6
SW9
N. C
Q1011
L1004, C1011
FILTER
R1003, C1010
SW14 PB
REC
N/S-LPF
SW4
EE
SW3 VHS
SVHS
EQ
SW10
SW CTL
I²C Interface
to filter
CR adj
+5V
IC1002
R1010, R1012, C1041, C1043
R1011, R1013, R1014, C1042, C1044
R1017, R1018, R1020, C1048, C1049
R1016, R1019, R1021, C1047, C1050
EP
SP
NL PROCESS
EP/SP
CN1001
D.FF(V)
I2C_DATA
I2C_CLK
VREF
fsc
V.PULSE
PB_C_OUT
R_Y1_IN
R_C1_IN
FRONT(L)
LINE_V_IN/R_V1_IN
CN1002
C_OUT
Y_OUT
REC_C_OUT
CHARA DATA
V_FROM_OSD
V_TO_OSD
I2C_CLK
I2C_DATA
SVHS (L)
Y_FROM_AV1
Y_TO_AV1
Y_TO_SUB
ME_ALC_DET
LINE/TU_V_IN
BS_IN/F_V_IN
A
B
C
D
E
F
G
H
1
2
3
4
5


0 3 MAIN (VIDEO,ON SCREEN)
TO SYSCON
VIDEO_ENV
HEAD_SEL
EE(L)
I2C_DATA
I2C_CLK
MA_VIDEO
NOM/MESEC/S
OSD_CS
S.CLK
S.DATA_FRSYS
ET_REC(H)
D.FF
C.SYNC/VREF
V.PULSE
FRONT(L)
D201
D202
D203
CN1901
GR_VIDEO
TU_VIDEO
TO TUNER
TU_VIDEO
VIDEO_OSD_OUT
J7505
REAR_S1_IN
J7506
REAR_S1_OUT
J7501
REAR_1_IN
V.IN
J7503
REAR_1_OUT
V.OUT
Q7507
BUF
CN101
D.FF(V)
I2C_DATA
I2C_CLK
VREF
fsc
V.PULSE
PB_C_OUT
R_Y1_IN
R_C1_IN
FRONT(L)
LINE_V_IN/R_V1_IN
CN102
C_OUT
Y_OUT
REC_C_OUT
CHARA DATA
V_FROM_OSD
V_TO_OSD
I2C_CLK
I2C_DATA
SVHS (L)
Y_FROM_AV1
Y_TO_AV1
Y_TO_SUB
ME_ALC_DET
LINE/TU_V_IN
BS_IN/F_V_IN
IC201
CS
SCLK
SDATA
CHABLK
CV IN
CVOUT
XTAL_IN
Q207
Q208
BUF
Q211
BUF
L202, C204
FILTER
C43
FILTER
CLOCK DRIVER
MODE CTL
C-CCD
Y-CCD
NOT USED
6dB AMP
C.SOUELH
CCD CTL
CCD LPF
CLEAR SYNC
WHITE LIMITER
SOUELH
Feed Back Clamp
Video ALC
Sync.Sep.
Pulse Gen.
C.K
N→P
B.D
VCA
CLK DATA
I2C Interface
LEVEL Det1
LEVEL Det2
CLPF
Delay
2fsc VCO
1H LOCK CTL
Clock
CR Det. 2fsc
X-tal VCO/OSC
Color Killer ID Det.
PB APC
REC APC
REC AFC
PB/REC Discri
APC SW
ACC Det
1/2 Phase SW
DOWN Conv.
1/2 2FL VCO
4Phase Gen.
TANC
ME SECAM DET
Main Conv2
Main Conv1
B.E
MIX LEVEL ADJ
BPF
REC TRAP
OFF
TRAP
CTL TRAP 1H HPF
ACC
2M LPF
HPF
SEP.
COMP
LPF
L-SECAM
REC MUTE
629 TRAP
FM AGC
DET
SQPB
SQPB DL
P EQ
G EQ
DLIM
DeMOD
Sub LPF
1MHPF
7MLPF
Isglead LPF
FM MOD
REC AGC Det
PB ALC
APT CTL
Edge Delay
DO Det
D.E. N.C.
N.L. De.Emph
N.L. Emph
FBC/ALC
Main De.Emph
Video AGC
YNR
DO
Y.LPF
Main Emph Carrier Offset W.C/D.C
fo/Dev Adj
S-DET
ATT (-10dB)
LPF
Clamp
SW5V
IC1
Head SW1
Head SW2
D.FF CTL
HPF
ENV DET
SP2
SP1
EP2
EP1
CH2
CH1
SP
EP
A.VCC
AUDIO SECTION
REC EQ
EP ON
SW1
REC ON
PRE AMP
SW2
SP ON
A.MUTE
TP111
D.FF
TP106
V.PB FM
IC2
Q15
BUF
L13
C79, C80
EQ
Q13, Q14
BUF
Q152
BUF
Q16
ES
Q17
ES
Q49
BUF
Q45
BUF
X2
CN1
U. DRUM
VIDEO HEAD
SP CH2
SP CH1
EP CH2
EP CH1
Q21, Q159
SW & BUF
3 6 JACK
J7191
FRONT VIDEO IN
CN7191
FRONT_VIDEO
CN7504
5
4
3
2
1
A
B
C
D
E
F
G
H

4.28 AUDIO BLOCK DIAGRAM


03 MAIN (FMA/N.AUDIO, TERMINAL)
36 JACK
FRONT IN
J7193
AUDIO (R)
J7192
AUDIO (L)
CN7191
F.AUDIO (R)
CN7504
F.AUDIO(L)
TO TUNER
DEMOD(R)
DEMOD(L)
RF_AUDIO
NOT USED
IC2201
(FM AUDIO SIGNAL PROCESSOR & FM AUDIO HEAD AMP)
(EXT3)
EXT2
TU
EXT1
EXT3
DEC (R)
DEC(L)
MIX
NA IN
LINE(R)
LINE(L)
NA OUT
LOG (L)
LOG(R)
INPUT SELECT (R-CH)
INPUT SELECT (L-CH)
SW
MIX
OUTPUT SELECT
NORMAL
R CH
L CH
NORMAL INPUT SELECT
NOISE REDUCTION (R-CH)
NOISE REDUCTION (L-CH)
EVR /AGC
PRE EMP
DE EMP
VCO
PC
BPF
LIM
AGC
DET
REC AGC ADJ
LOGIC
DATA
CLK
N. DET
A. FF
MUTE(H)
Q2254-Q2257
A.REC FM CONTROL
VR2251
A.REC FM ADJ
TO SYSCON
S.CASS(H)
ET_REC(H)
FLY.ON(H)
FLY.REC(H)
Q401-Q403
POWER SW
Q404 Q405
AMP
TP2253
A.PB FM
TP2254
REC FM
Q2258
PRE
CN1
U.DRUM
FLYING ERASE HEAD
FLY.E
CH1
CH2
AUDIO HEAD
EE(L)
A.REC _ST(H)
A.FF
I2C_DATA
I2C_CLK
A.ENV/ND(L)
MA_AUDIO
A.MUTE(H)
N.REC(H)
FULL_E_ON(H)
REAR _1_IN
J7501
AUDIO (R)
AUDIO (L)
REAR _1_OUT
J7503
Q2201~Q2204
AUDIO MUTE CONTROL SWITCH
A.MUTE (H)
IND(L)
IND(R)
TO SYSCON
VSC_CLK
VSC_DATA
IC2501
CPU INTER-FACE
D/A CONV
RAM INTER-FACE
PROCESS
CLOCK GEN
A/D CONV
AMP
LPF
R2509 -R2511 C2511, C2512
LPF2501
CF2501
IC1
(VIDEO & AUDIO SIGNAL PROCESSOR)
A.MUTE (H)
A. MUTE
DET
VCA
R
P
SP ON
PRE AMP
REC ON
EP ON
REC EQ
Q2103
BUF
R2003-R2005 C2003, C2004
FILTER
R2007,C2009
Q2052-Q2055
Q2062 Q2063
Q2061
Q2051
OSC
T2051
TRANS
T2052
TP2034
F. ERASE
CN2002
FULL ERASE HEAD
F. ERASE
TP2033
A.ERASE
CN2001
12
A/C HEAD
A. ERASE
REC/PB
A
B
C
D
E
F
G
H
1
2
3
4
5

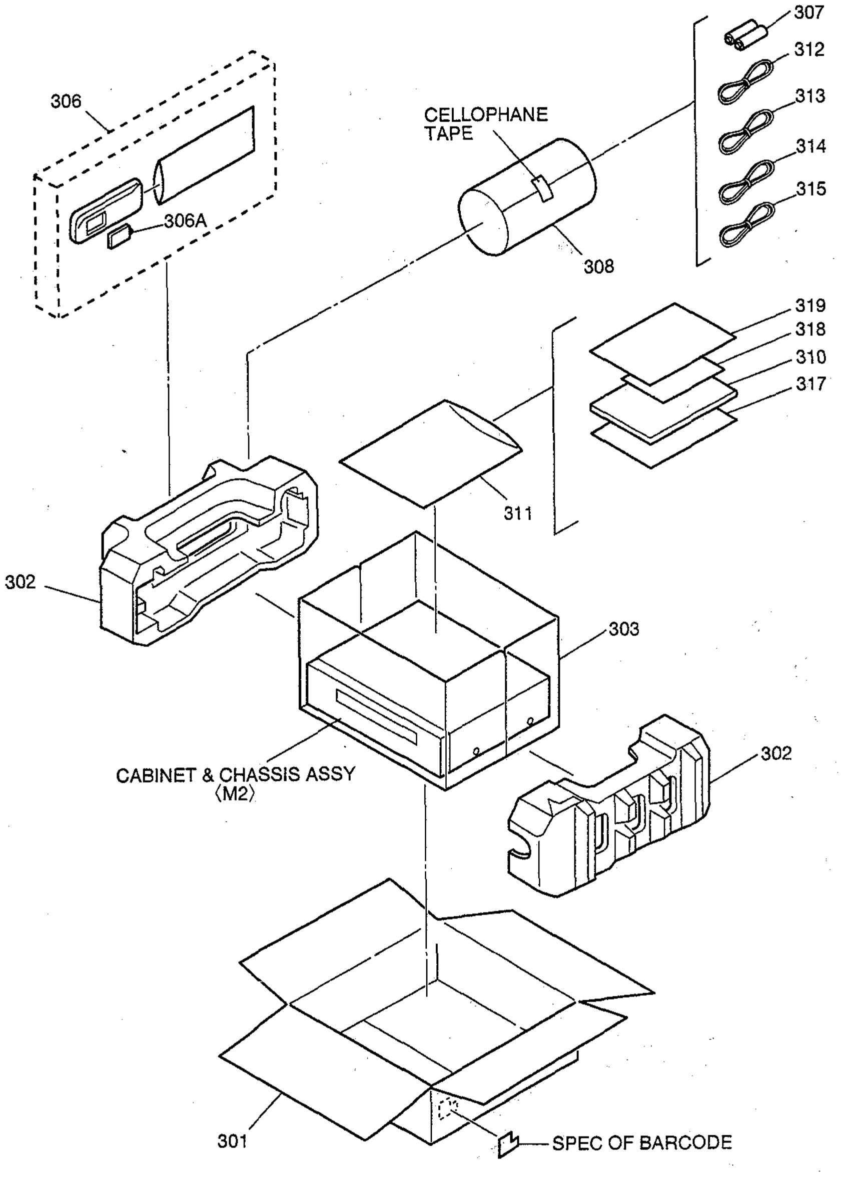
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.


307
312
313
314
315
306
CELLOPHANE TAPE
306A
308
319
318
310
317
311
302
303
CABINET & CHASSIS ASSY (M2)
302
301
SPEC OF BARCODE

****

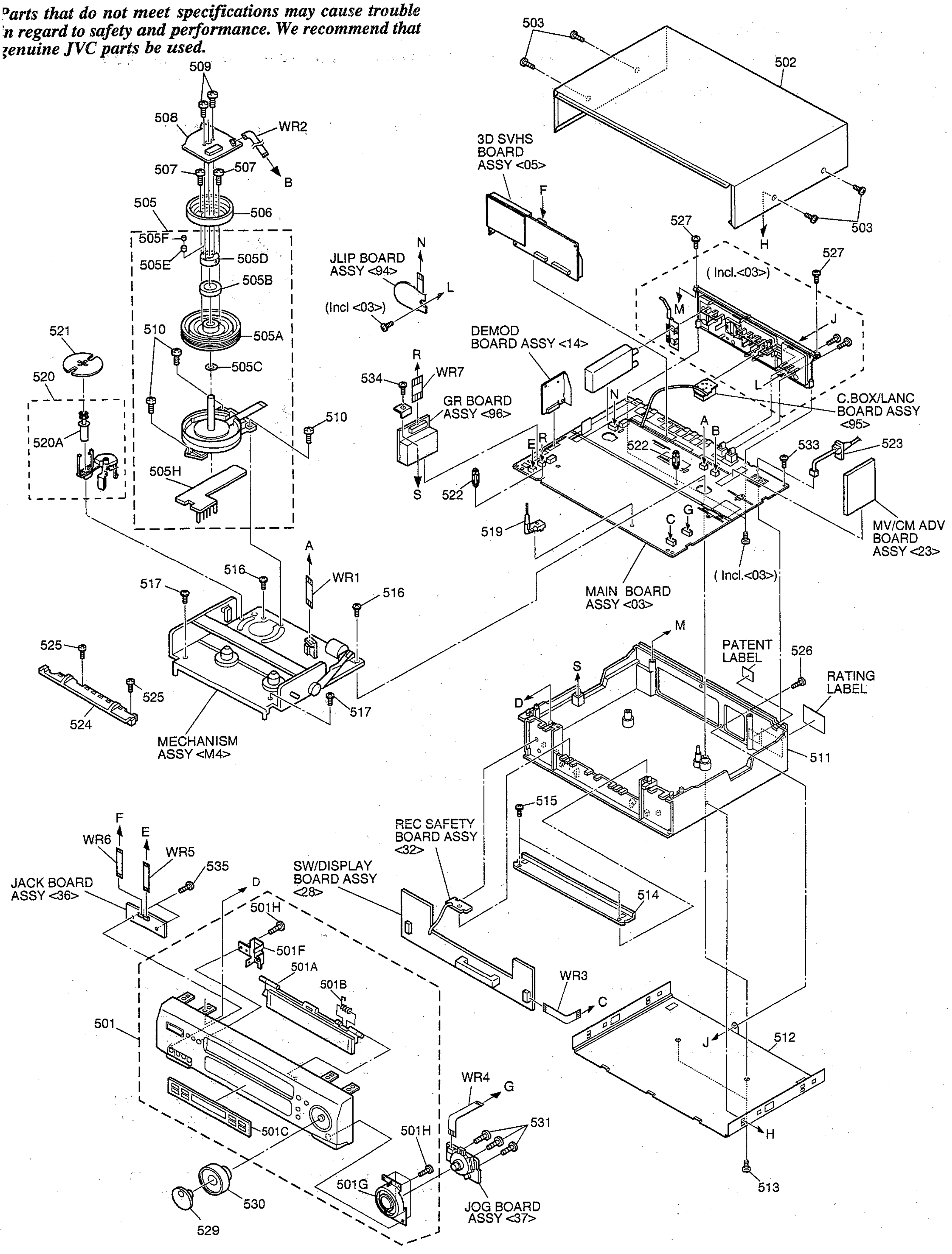
PACKING AND ACCESSORY ASSEMBLY <M1>

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	301	LP30596-007A	PACKING CASE
	302	LP30605-002A	CUSHION ASSY
	303	PQM30021-95	POLY BAG
	306	LP20465-001D	REMOTE CONTROLLER
	306A	LP40254-003B	COVER(BATTERY)
	307	—	BATTERY,X2("AA" TYPE)
	308	QPC02202230P	POLY BAG
⚠	310	LPT0241-001A	INST.BOOK(EN)
⚠		LPT0241-003A	INST.BOOK(FR)
	311	QPC02503530P	POLY BAG
	312	PEAC0294-04	RF CABLE
	313	PEAC0359-120	PIN CORD(Audio/Video)
	314	QAL0095-004	LED CABLE ASSY(Controller)
	315	PEAC0358-120	S CABLE
	317	LPT0241-002A	Q.S.SHEET
	318	LP40437-001A	LABEL(S-VHS ET)
	319	BT-51020-2	REGIST.CARD

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.


503
502
509
508
WR2
507
507
B
505
506
505F
505E
505D
505B
505A
505C
510
510
510
505H
521
520
520A
3D SVHS BOARD ASSY <05>
F
527
527
H
503
JLIP BOARD ASSY <94>
N
L
(Incl <03>)
(Incl.<03>)
M
J
L
DEMOD BOARD ASSY <14>
R
WR7
534
GR BOARD ASSY <96>
S
522
522
N
A
B
E
R
C.BOX/LANC BOARD ASSY <95>
533
523
MV/CM ADV BOARD ASSY <23>
519
C
G
(Incl.<03>)
MAIN BOARD ASSY <03>
A
WR1
516
516
517
517
525
525
524
MECHANISM ASSY <M4>
M
PATENT LABEL
526
RATING LABEL
S
D
511
515
REC SAFETY BOARD ASSY <32>
514
F
E
WR6
WR5
535
JACK BOARD ASSY <36>
D
SW/DISPLAY BOARD ASSY <28>
501H
501F
501A
501B
WR3
C
501
J
512
501C
WR4
G
531
501H
501G
530
529
JOG BOARD ASSY <37>
H
513

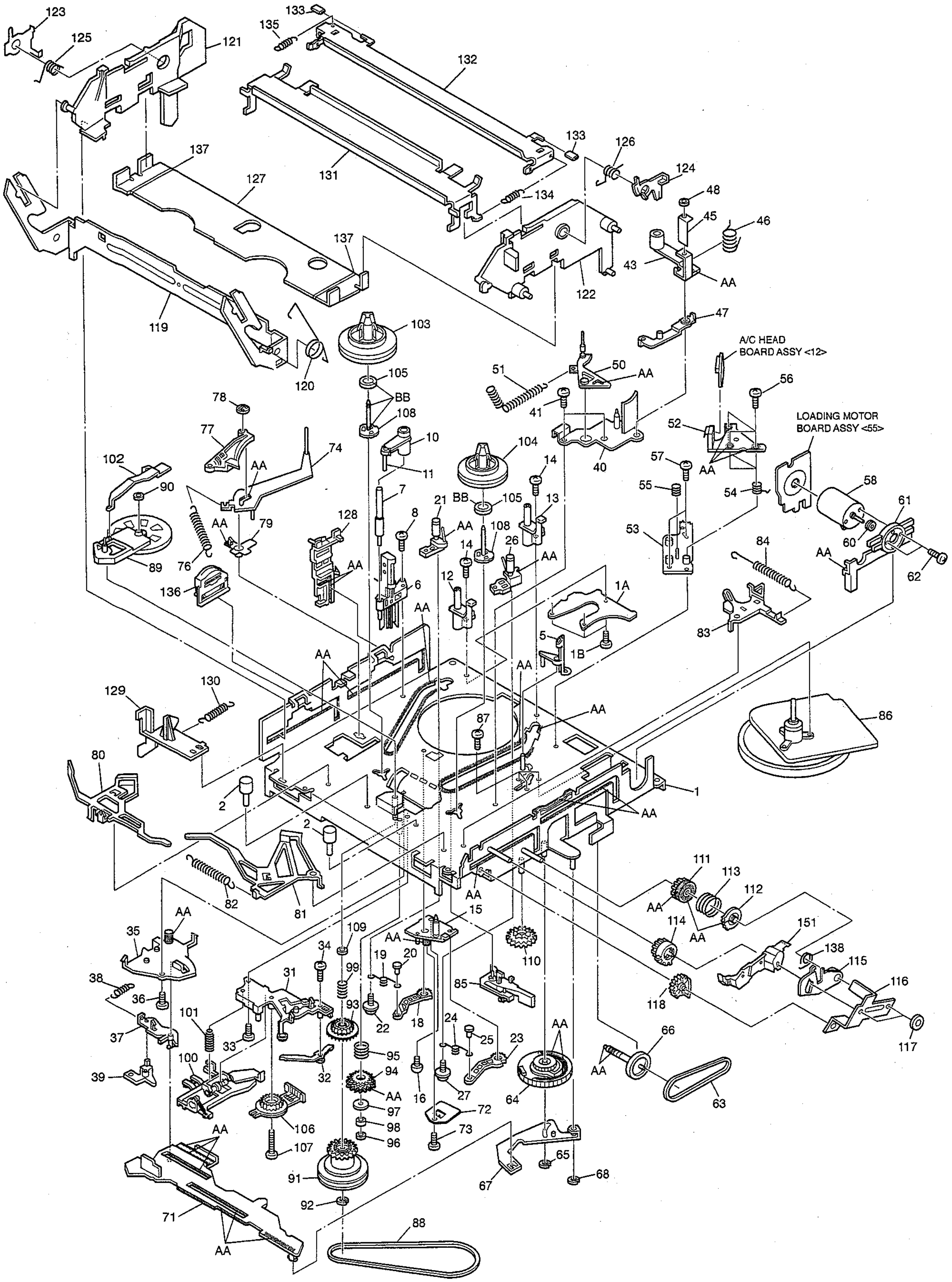
****

CABINET AND CHASSIS ASSEMBLY <M2>

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	501	LP10088-010A	FRONT PANEL ASSY
	501A	LP20716-002A	CASSETTE DOOR
	501B	PQ46448	TORSION SPRING
	501C	LP20250-007A	DISPLAY WINDOW
	501F	LP40159-001B	BRACKET(DAMPER)
	501G	LP20613-002A	ORNAMENT
	501H	SDSF2608Z	SCREW,X5
⚠	502	PQ11922-22-5	TOP COVER
	503	QYTDSF3010R	SCREW,X4 TOP COVER(SIDE)
	505	LP20319-007A	DRUM SUB ASSY
	505A	LP20030-016A	UPPER DRUM ASSY
	505B	PDM4439	CAP
	505C	PDM4444-19-2	WASHER
	505D	LP40028-002A	COLLAR ASSY
	505E	LP40323-001A	CONTACT
	505F	LP30004-014A	COMPRESSION SPRING
	505H	LPA20002-01C	SENSOR BOARD ASSY
	506	PDZ0179-2-4	ROTOR ASSY
	507	QYSPSP3006Z	SCREW,X2 ROTOR
	508	PDZ0180-1-2	STATOR ASSY
	509	QYSPSPL2607Z	SCREW,X2 STATOR
	510	QYTDST2610Z	SCREW,X3 DRUM
⚠	511	LP10140-005B	BOTTOM CHASSIS
⚠	512	PQ11921-1-3	BOTTOM COVER
	513	QYTDSF3010Z	SCREW,X2 BOTTOM COVER
	514	LP30312-001B	BRACKET(CHASSIS)
	515	QYTDSF3010Z	SCREW,X2 BRACKET CHASSIS
	516	QYTDSF4012Z	SCREW,X2 MECHA
	517	QYTDSF3010Z	SCREW,X2 MECHA
	519	LP40407-001A	KNOB ASSY
	520	LP40370-001E	ROLLER ARM ASSY
	520A	PDM4311A-1	ROLLER ASSY
	521	PQ44230	INERTIA PLATE
	522	LP40226-001A	PC SUPPORT,X2
⚠	523	QMPD190-170-K	POWER CORD
	524	LP30247-001B	FRONT BRACKET
	525	QYTDST2606Z	SCREW,X2 FRONT BRACKET
	526	QYTDSF3010M	SCREW,TERMINAL
	527	QYTPSFG3010Z	SCREW,X2 TERMINAL
	529	LP30121-005A	KNOB(JOG)
	530	LP30120-005A	KNOB SHUTTLE
	531	QYTDSF2608Z	SCREW,X3 JOG
	533	QYTDSF3010Z	SCREW,MAIN
	534	QYTPSFG3010Z	SCREW,GR
	535	QYTDSF2608Z	SCREW,X2 JACK
	WR1	QUQ112-0714CG	FFC WIRE,A/C HEAD CN2001
	WR2	QUQ212-0520CG	FFC WIRE,DRUM CN3001
	WR3	QUQ112-1414CG	FFC WIRE,DISPLAY CN3011
	WR4	QUQ112-0616CG	FFC WIRE,JOG CN3012
	WR5	QUQ212-0516CG	FFC WIRE,JACK CN7504
	WR6	QUQ212-0456CG	FFC WIRE,S JACK CN3004
	WR7	QUQ112-1113CG	FFC WIRE,GR CN1901

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION

5.3 MECHANISM ASSEMBLY <M4>



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AA
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47
A/C HEAD BOARD ASSY <12>
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BB
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LOADING MOTOR BOARD ASSY <55>
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AA

Classifi-cation	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

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MECHANISM ASSEMBLY <M4>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	LP20228-009C	MAIN DECK ASSY
1A	LP40275-003A	PLATE(SUPPLY)
1B	QYTDST2606Z	SCREW,X4
2	PQ46302-1-3	ADJUST PIN
5	LP30492-002B	GIDE POLE GUARD
6	NAH0001-001	FULL ERASE HEAD
7	LP40098-001B	GUIDE POLE(SUPPLY)
8	QYTDST2608Z	SCREW,FE HEAD
10	LP30459-002A	TENSION STUD BASE
11	LP40367-002A	TENSION STUD
12	LP40096-001B	UV CATCHER(SUPPLY)
13	LP40536-001A	UV CATCHER ASSY(TAKE UP)
14	QYTPST2606Z	SCREW,X2 UV CATCHER
15	LP30223-003C	LOADING ARM GEAR SHAFT
16	QYTDST2606Z	SCREW
18	LP30224-001A	LOADING ARM GEAR(SUPPLY)
19	LP40099-001A	TORSION ARM
20	LP40100-001A	PIN
21	LP40101-003D	POLE BASE ASSY(SUPPLY)
22	QYSPSTG2606Z	SCREW
23	LP40103-002B	LOADING ARM GEAR(TAKE UP)
24	LP40099-001A	TORSION ARM(TAKE UP)
25	LP40100-001A	PIN
26	LP40104-002A	POLE BASE ASSY(TAKE UP)
27	QYSPSTG2606Z	SCREW
31	LP20233-003G	ROTARY ENCODER GUIDE
32	LP30499-001A	BRAKE LEVER
33	QYTPST2606Z	SCREW
34	QYTPST2608Z	SCREW
35	LP30226-004B	CONTROL PLATE GUIDE
36	QYTPST2605Z	SCREW
37	LP30249-003B	TAKE UP LEVER
38	LP30003-006A	TENSION SPRING
39	LP40119-002A	T.UP HEAD
40	LP20234-004B	LID GUIDE
41	QYTDST2606Z	SCREW,X2
43	LP40105-001B	PINCH ROLLER ARM ASSY
45	LP40478-001A	PINCH ROLLER SHEET2
46	LP40148-002A	TORSION SPRING
47	LP40149-001B	P.LEVER ASSY
48	LP30016-002A	SLIT WASHER
50	LP40106-002E	GUIDE ARM ASSY
51	LP40134-001C	TENSION SPRING
52	QAH0010-004	AC HEAD
53	LP30228-001A	HEAD BASE
54	LP30004-013A	COMPRESSION SPRING,X3
55	LP40236-001A	COMPRESSION SPRING
56	LP40213-002B	SPECIAL SCREW,X3
57	QYTDST2608Z	SCREW,X2 HEAD BASE
58	QAR0023-001	LOADING MOTOR
60	PQ43546-1-2	MOTOR PULLEY
61	LP30230-003A	MOTOR GUIDE
62	QYTPSP3003Z	SCREW,X2
63	LP30005-003A	BELT,LOADING MOTOR
64	LP20791-002B	CONTROL CAM
65	PQM30017-24	SLIT WASHER
66	LP40120-001A	WORM GEAR
67	LP40107-002A	LINK LEVER ASSY
68	PQM30017-24	SLIT WASHER
71	LP10201-002D	CONTROL PLATE
72	LP40379-001A	CTL BRACKET(1)
73	QYTDSF2608M	SCREW
74	LP40108-002A	TENSION ARM ASSY
76	LP30003-010A	TENSION SPRING
77	LP40109-003D	TENSION BRAKE ASSY
78	PQ46302-1-3	ADJUST PIN
79	LP30232-002A	T.ARM BEARING
80	LP40532-001A	MAIN BRAKE ASSY (SUPPLY)
81	LP40111-006A	MAIN BRAKE AY (TAKE-UP)
82	LP30003-002A	TENSION SPRING
83	LP40112-001F	SUB BRAKE ASSY(TAKE UP)
84	LP40357-002A	TENSION SPRING
85	LP40461-001A	CAPSTAN BRAKE ASSY
86	QAR0087-003	CAPSTAN MOTOR
87	QYTDSF2606M	SCREW,X3
88	LP30005-007A	BELT,CAPSTAN MOTOR
89	LP40114-008A	IDLER ARM ASSY
90	LP30016-001A	SLIT WASHER
91	LP40459-003A	CLUTCH UNIT
92	PQM30017-47	SLIT WASHER
93	LP40446-002B	CLUTCH GEAR 1
94	LP40442-001A	DIRECT GEAR
95	LP40483-003A	COMPRESSION SPRING
96	LP30016-001A	SLIT WASHER
97	LP30017-014A	SPACER,D.GEAR
98	QYWFM264713	WASHER,D.GEAR
99	LP40554-001A	COMPRESSION SPRING,C.GEAR1
100	LP40484-001F	CHANGE LEVER ASSY
101	LP40512-002B	COMPRESSION SPRING.R.E.GUIDE
102	LP30236-002B	IDLER LEVER
103	LP40420-001A	REEL DISK ASSY(SUPPLY)
104	LP40421-001A	REEL DISK ASSY(TAKE UP)
105	LP30017-015A	SPACER,X2 REEL DISK
106	QSW0554-003	ROTARY ENCODER
107	QYTPST2620Z	SCREW
108	LP40123-001A	REEL SHAFT,X2
109	LP30017-019A	SPACER,C.GEAR1
110	LP30237-002B	CASSETTE GEAR
111	LP30239-002F	LIMIT GEAR(1)
112	LP30240-002G	LIMIT GEAR(2)
113	LP40136-001E	TORSION SPRING
114	LP30242-002A	RELAY GEAR
115	LP30339-002D	OPENER GUIDE
116	LP40214-001B	C.H.BRACKET
117	PQM30017-47	SLIT WASHER,X2
118	LP30243-001D	DRIVE GEAR
119	LP20240-001C	DRIVE ARM
120	LP40137-001A	TORSION SPRING
121	LP10081-002L	SIDE HOLDER(L)
122	LP10082-002M	SIDE HOLDER(R)
123	LP30255-003C	LOCK LEVER(L)
124	LP30256-001G	LOCK LEVER(R)
125	LP40168-001A	TORSION SPRING(L)
126	LP40218-001B	TORSION SPRING(R)
127	LP30257-001E	CASSETTE HOLDER
128	LP30244-002G	GUIDE RAIL
129	LP30245-002E	REC SAFETY LEVER
130	LP30003-004A	TENSION SPRING
131	LP20578-001C	TOP GUIDE
132	LP30500-001B	HOLD PLATE
133	LP40450-003A	PAD,X2 HOLD PLATE
134	LP30003-025B	TENSION SPRING(TAKE UP)
135	LP30003-124A	TENSION SPRING(SUPPLY)
136	LP40481-003A	ROLLER CAM ASSY
137	LP30019-014A	PAD,X2 CASSETE HOLDER
138	LP40545-001A	TORSION SPRING,OPENER GUIDE
151	LP20324-002E	DOOR OPENER

5.4 ELECTRICAL PARTS LIST

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MAIN BOARD ASSEMBLY <03>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA10048-06B1	MAIN BOARD ASSY
IC1	JCP8017-NSA	IC
IC2	MM1113XF	IC
IC201	LC74785N-9762	IC (OSD)
IC2201	AN3651FBP	IC
IC2501	LC85405JE	IC
IC3001	HD6432194A06F	IC
	or HD64F2194FA06	IC
IC3002	S-80728AN-DR-X	IC
	or S-80828ANUP-W	IC
IC3003	AT24C16-10PC	IC
	or 24LC16B/P	IC
IC3004	TA7291S	IC
IC3301	M38513M4C56FP	SOP IC(MPU)
	or M38513E4C56FP	SOP IC(MPU)
IC3501	TA7291S	IC
IC5301	LA5634	IC
Q13	2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
Q14	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q15	2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
Q16	UN511E	TRANSISTOR
	or RN2309	TRANSISTOR
	or DTA144WU	TRANSISTOR
Q17	UN521E	TRANSISTOR
	or DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
Q18	UN521E	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
Q21	UN521E	TRANSISTOR
	or DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
Q45	2SB1218A/QR/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q49	2SC3936/BC/-X	TRANSISTOR
Q53	DTC144WS	TRANSISTOR
Q101	UN521E	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
Q152	2SB1218A/QR/-X	TRANSISTOR
	or 2SA1576A/QRS/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q159	2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
Q203	UN521E	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
Q207	2SB1218A/QR/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q208	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q401	2SA1576A/QR/-X	TRANSISTOR
Q402	UN521E	TRANSISTOR
	or DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
Q403	UN521E	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
Q404	2SA1576A/QR/-X	TRANSISTOR
Q405	2SA1576A/QR/-X	TRANSISTOR
Q2001	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q2002	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2003	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2051	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2052	2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
Q2053	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2054	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2055	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2061	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2062	2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
Q2063	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2102	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2103	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2151	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q2152	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2201	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q2202	2SC4081/QRS/-X	TRANSISTOR

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2203	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2204	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2254	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
	or RN1302	TRANSISTOR
Q2255	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2256	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2257	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2258	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2501	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q2502	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q3001	2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
Q3002	PTZ-NV16	PHOTO TRANSISTOR
Q3003	PTZ-NV16	PHOTO TRANSISTOR
Q3004	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q3005	2SC1740S/QRS/-T	TRANSISTOR
	or 2SC3199/YG/-T	TRANSISTOR
Q3009	UN521E	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
Q3501	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q4001	UN5211	TRANSISTOR
	or RN1302	TRANSISTOR
	or DTC114EU	TRANSISTOR
Q5101	2SK2043-CB14	FE TRANSISTOR
	or 2SK2324	POWER MOS FET
	or 2SK2324-LT	POWER MOS FET
	or 2SK1953	FE TRANSISTOR
	or 2SK2043	FE TRANSISTOR
Q5102	2SD2144S/UV/-T	TRANSISTOR
Q6030	2SB1218A/QR/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q6501	DTC114TU	TRANSISTOR
	or RN1311	TRANSISTOR
	or UN5215	TRANSISTOR
Q6502	DTC114TU	TRANSISTOR

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
	or RN1311	TRANSISTOR
	or UN5215	TRANSISTOR
Q6551	2SC1740S/QRS/-T	TRANSISTOR
	or 2SC3199/YG/-T	TRANSISTOR
Q7201	2SD1292/QR/-T	TRANSISTOR
Q7507	2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
D16	DA204U	DIODE
D17	DA204U	DIODE
D201	1SS355	DIODE
D202	1SS355	DIODE
D203	1SS355	DIODE
D204	1SS355	DIODE
D2001	1SS133	DIODE
	or 1N4148M	DIODE
D2201	11ES2	DIODE
D2501	1SS355	DIODE
D3001	LNB2301L01VI	LE DIODE
D3002	1SS133	DIODE
D3003	RD39ES/B3/-T2	ZENER DIODE
	or MTZJ39C	ZENER DIODE
D3004	11E2-T5	DIODE
D3005	11E2-T5	DIODE
D3007	1SS133	DIODE
D3961	RB721Q-40-T2	SB DIODE
D3964	DA204U	DIODE
D4001	1SS355	DIODE
D4002	1SS355	DIODE
D5001	S1WB(A)60F4102	BRIDGE DIODE
	or S1WB(A)60F4072X	BRIDGE DIODE
	or S1WB(A)60F4062X	BRIDGE DIODE
D5101	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE
	or PG104RS	FR DIODE
D5102	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE
	or PG104RS	FR DIODE
D5103	1SS133	DIODE
D5201	AK04	DIODE
	or 1S4	SB DIODE
	or 11EQS04	SB DIODE
D5202	FML-12S	FR DIODE
	or MA644	FR DIODE
	or FCF06A20	FR DIODE
	or YG901C2	FR DIODE
D5206	FMB-24	BARRIER DIODE
	or FSQ05A04B	SB DIODE
	or MA7D49	SB DIODE
	or YG801C04	SB DIODE
D5210	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS2	FR DIODE
	or PG104RS	FR DIODE
D5211	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE

REF No.	PART No.	PART NAME, DESCRIPTION	
	or PG104RS	FR DIODE	
	or 10ELS2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
D5301	MTZJ15A	ZENER DIODE	
	or RD15ES/B1/-T2	ZENER DIODE	
D5302	MTZJ6.8A	ZENER DIODE	
	or RD6.8ES/B1/-T2	ZENER DIODE	
D5303	MTZJ27C	ZENER DIODE	
	or RD27ES/B3/-T2	ZENER DIODE	
D5304	1SS133	DIODE	
D5311	RD5.1ES/B3/-T2	ZENER DIODE	
	or MTZJ5.1C	ZENER DIODE	
D6002	HZ30-2L-T2	ZENER DIODE	
	or HZ30-2LTD	Z DIODE (M)	
D6551	MTZJ10B	ZENER DIODE	
R1	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R2	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R6	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R11	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R15	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R16	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R23	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R24	NRVA02D-622X	CMF RESISTOR	6.2kΩ,1/10W
R25	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
R48	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R49	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R50	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R52	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R54	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R55	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R56	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R57	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R62	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R64	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
R68	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R69	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R71	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R73	NRSA02J-683X	MG RESISTOR	68kΩ,1/10W
R75	NRVA02D-122X	CMF RESISTOR	1.2kΩ,1/10W
R94	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R95	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R96	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R101	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R116	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R139	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
R143	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R166	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R170	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R171	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R181	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R189	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R195	NRSA02J-684X	MG RESISTOR	680kΩ,1/10W
R197	NRSA02J-106X	MG RESISTOR	10MΩ,1/10W
R201	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R207	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R208	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R212	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R213	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R215	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R217	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R218	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R219	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R223	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R224	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R225	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R401	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R402	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R403	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R404	NRSA02J-683X	MG RESISTOR	68kΩ,1/10W
R405	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R408	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R409	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R410	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R2001	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2002	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2003	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2004	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
R2005	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
R2006	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R2007	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R2013	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2020	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2053	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2054	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R2055	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R2056	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2057	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2058	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2059	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2060	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2061	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R2062	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R2063	QRE141J-151Y	RESISTOR	150Ω,1/4W
R2064	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2065	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2105	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R2106	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2107	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2151	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R2152	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2206	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
R2207	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2208	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2209	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
R2210	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2211	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2212	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2213	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2214	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2215	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2216	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2217	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2218	NRSA02J-560X	MG RESISTOR	56Ω,1/10W
R2219	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2220	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2221	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2222	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2223	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2225	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R2226	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R2227	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R2236	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2237	NRSA02J-511X	MG RESISTOR	510Ω,1/10W
R2239	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2240	NRSA02J-511X	MG RESISTOR	510Ω,1/10W
R2241	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2242	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2243	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2244	NRSA02J-560X	MG RESISTOR	56Ω,1/10W
R2251	NRVA02D-303X	CMF RESISTOR	30kΩ,1/10W
R2252	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R2253	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R2255	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2501	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R2502	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2503	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R2504	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2505	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
R2506	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2507	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2508	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
R2509	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2510	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R2511	NRSA02J-154X	MG RESISTOR	150kΩ,1/10W
R2512	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2513	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2514	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2515	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2519	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2520	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2522	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R3011	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3012	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3013	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3014	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3015	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3016	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3017	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3020	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3021	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3022	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3025	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3026	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3027	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3029	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3030	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3031	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3033	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3034	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3035	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3036	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3037	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3038	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R3039	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3040	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3041	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3042	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3044	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R3046	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3047	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3048	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3049	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3050	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3051	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3052	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3053	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3054	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3055	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3056	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3057	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3058	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3059	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3060	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3061	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3062	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3063	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3066	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3069	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3071	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3072	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3073	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3074	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3075	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3076	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3077	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3078	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3079	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3080	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3081	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3083	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3085	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3086	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3087	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3088	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R3089	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3090	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3091	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3092	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3093	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3094	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3095	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3096	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3097	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3103	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3104	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3105	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3106	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3201	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3202	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3203	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3204	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R3205	QRE141J-181Y	RESISTOR	180Ω,1/4W
R3206	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R3207	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R3208	QRE141J-181Y	RESISTOR	180Ω,1/4W
R3209	QRE141J-273Y	RESISTOR	27kΩ,1/4W
R3210	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R3211	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R3212	QRE141J-474Y	RESISTOR	470kΩ,1/4W

REF No.	PART No.	PART NAME, DESCRIPTION	
R3213	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
R3214	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3215	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3216	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3217	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R3218	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3219	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3220	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R3222	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3223	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3224	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3225	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3229	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
R3230	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3231	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3233	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3234	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3235	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3236	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3237	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3238	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3239	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3240	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3241	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3244	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3247	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3251	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3304	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3306	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3307	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3308	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3311	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3312	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3313	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3314	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3316	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3318	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3319	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R3328	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3331	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3332	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3333	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3335	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3339	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3341	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3342	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3353	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3354	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3501	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R3502	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R3503	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R3504	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
R3505	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R3506	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R3961	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R4001	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R4003	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R4004	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R4005	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R4006	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R4007	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R4008	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R4009	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R4010	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R4011	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
	R4012	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
	R4013	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R4014	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
	R4015	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
	R4016	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
	R4017	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R4018	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R4019	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
	R4020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
	R4021	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
⚠	R5001	QRZ9046-475Z	RESISTOR	4.7MΩ,1/2W
	R5101	QRE141J-224Y	RESISTOR	220kΩ,1/4W
	R5102	QRE141J-224Y	RESISTOR	220kΩ,1/4W
	R5103	QRE141J-683Y	RESISTOR	68kΩ,1/4W
	R5104	QRG02GJ-683	OMF RESISTOR	68kΩ,2W
	R5106	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
	R5107	QRE121J-561Y	RESISTOR	560Ω,1/2W
	R5108	QRE141J-152Y	RESISTOR	1.5kΩ,1/4W
	R5109	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
	R5110	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
	R5301	QRE141J-1R0Y	RESISTOR	1Ω,1/4W
	R5302	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R5303	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
⚠	R5304	QRZ9005-221X	FUSI RESISTOR	220Ω,1/4W
	R5305	QRE141J-471Y	RESISTOR	470Ω,1/4W
	R5306	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
	R5324	QRE141J-102Y	RESISTOR	1kΩ,1/4W
	R5331	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R5332	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
	R6020	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
	R6021	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
	R6022	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
	R6030	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
	R6031	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R6032	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
	R6050	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R6053	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R6508	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R6510	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R6551	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
	R6552	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R6553	QRE141J-471Y	RESISTOR	470Ω,1/4W
	R6554	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
	R7202	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
	R7203	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
	R7204	QRL01DJ-100X	OMF RESISTOR	10Ω,1W
	R7501	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R7502	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
	R7503	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R7504	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R7506	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
	R7507	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
	R7513	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
	R7514	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
	R7535	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
	R7537	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
	R7538	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
	R7541	QRE123J-391X	RESISTOR	390Ω,1/2W

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R7542	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	VR2251	QVP0039-473Z	TRIM RESISTOR,A.REC.FM	
	C1	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C3	NCF21CZ-105X	CAPACITOR	1μF,16V
	C5	NCF21CZ-105X	CAPACITOR	1μF,16V
	C6	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C7	QETN1CM-107	E CAPACITOR	100μF,16V
	C9	NCF21CZ-105X	CAPACITOR	1μF,16V
	C11	NCF21CZ-105X	CAPACITOR	1μF,16V
	C12	NCB21CK-473X	CAPACITOR	0.047μF,16V
	C13	QERF1HM-335	E CAPACITOR	3.3μF,50V
	C14	NCB21CK-474X	CAPACITOR	0.47μF,16V
	C18	NDC21HJ-150X	CAPACITOR	15pF,50V
	C20	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C21	NCB21HK-472X	CAPACITOR	0.0047μF,50V
	C23	NCB21HK-223X	CAPACITOR	0.022μF,50V
	C24	NCB21CK-474X	CAPACITOR	0.47μF,16V
	C25	NCB21HK-683X	CAPACITOR	0.068μF,50V
	C29	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C31	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C32	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C34	QENC1HM-105	E CAPACITOR	1μF,50V
	C36	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C37	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C41	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C42	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C43	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C45	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C47	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C48	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C49	NCB21HK-331X	CAPACITOR	330pF,50V
	C54	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C55	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C56	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
	C57	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C58	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C59	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C60	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C61	NDC21HJ-120X	CAPACITOR	12pF,50V
	C62	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C63	NDC21HG-151X	CAPACITOR	150pF,50V
	C64	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C65	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C73	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C74	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C77	NDC21HJ-470X	CAPACITOR	47pF,50V
	C79	NDC21HJ-120X	CAPACITOR	12pF,50V
	C80	NDC21HJ-180X	CAPACITOR	18pF,50V
	C85	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C86	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C87	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C88	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C89	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C90	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C92	NDC21HJ-220X	CAPACITOR	22pF,50V
	C98	NCF21CZ-105X	CAPACITOR	1μF,16V
	C99	NDC21HG-220X	CAPACITOR	22pF,50V
	C107	NDC21HJ-6R0X	CAPACITOR	6pF,50V
	C120	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C134	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C136	NCB11EK-104X	CAPACITOR	0.1μF,25V

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C141	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C158	NDC21HJ-101X	CAPACITOR	100pF,50V
	C168	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C201	QETJ0JM-477	E CAPACITOR	470μF,6.3V
	C202	NCB21CK-224X	CAPACITOR	0.22μF,16V
	C204	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C206	NDC21HJ-330X	CAPACITOR	33pF,50V
	C207	NDC21HJ-330X	CAPACITOR	33pF,50V
	C214	NCB21CK-224X	CAPACITOR	0.22μF,16V
	C218	NCB21AK-105X	CAPACITOR	1μF,10V
	C220	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C222	NCB21AK-105X	CAPACITOR	1μF,10V
	C223	NDC21HJ-220X	CAPACITOR	22pF,50V
	C402	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C403	NDC21HJ-220X	CAPACITOR	22pF,50V
	C404	NCS21HJ-681X	CAPACITOR	680pF,50V
	C405	NDC21HJ-220X	CAPACITOR	22pF,50V
	C406	NDC21HJ-180X	CAPACITOR	18pF,50V
	C407	NCB21HK-223X	CAPACITOR	0.022μF,50V
	C408	NDC21HJ-151X	CAPACITOR	150pF,50V
	C409	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2002	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C2003	NCB21HK-123X	CAPACITOR	0.012μF,50V
	C2004	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C2005	NCB21HK-102X	CAPACITOR	0.001μF,50V
	C2007	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2008	NCB21HK-152X	CAPACITOR	0.0015μF,50V
	C2009	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C2010	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C2013	NCB21EK-333X	CAPACITOR	0.033μF,25V
	C2015	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C2016	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C2051	NCB21HK-331X	CAPACITOR	330pF,50V
	C2052	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
	C2053	NCB21HK-332X	CAPACITOR	0.0033μF,50V
	C2054	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2055	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2061	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
	C2062	NCB21HK-332X	CAPACITOR	0.0033μF,50V
	C2063	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2064	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2101	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C2102	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C2151	NDC21HJ-101X	CAPACITOR	100pF,50V
	C2152	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2204	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C2205	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C2206	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C2207	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C2208	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2209	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2210	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2211	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2212	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C2213	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C2214	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C2215	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2216	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C2217	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C2218	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C2219	QEKJ1CM-106	E CAPACITOR	10μF,16V

REF No.	PART No.	PART NAME, DESCRIPTION	
C2220	QEKJ1CM-476	E CAPACITOR	47μF,16V
C2221	QEKJ1CM-106	E CAPACITOR	10μF,16V
C2222	QEKJ1CM-226	E CAPACITOR	22μF,16V
C2225	QEKJ1HM-224	E CAPACITOR	0.22μF,50V
C2230	NCB21CK-473X	CAPACITOR	0.047μF,16V
C2231	NCB21HK-153X	CAPACITOR	0.015μF,50V
C2232	QEKJ1HM-224	E CAPACITOR	0.22μF,50V
C2233	NCB21HK-153X	CAPACITOR	0.015μF,50V
C2234	NCB21CK-473X	CAPACITOR	0.047μF,16V
C2251	NCB21EK-104X	CAPACITOR	0.1μF,25V
C2252	NCB21HK-222X	CAPACITOR	0.0022μF,50V
C2253	NCB21HK-222X	CAPACITOR	0.0022μF,50V
C2257	QERF0JM-476	E CAPACITOR	47μF,6.3V
C2258	NCB21EK-104X	CAPACITOR	0.1μF,25V
C2259	NCB21EK-104X	CAPACITOR	0.1μF,25V
C2261	NCB21HK-103X	CAPACITOR	0.01μF,50V
C2262	NDC21HJ-101X	CAPACITOR	100pF,50V
C2263	NDC21HJ-101X	CAPACITOR	100pF,50V
C2501	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
C2502	NCB21HK-562X	CAPACITOR	0.0056μF,50V
C2503	QERF1HM-105	E CAPACITOR	1μF,50V
C2505	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
C2506	NCB21HK-103X	CAPACITOR	0.01μF,50V
C2507	NBE20JM-226X	T CAPACITOR	22μF,6.3V
C2508	NCB21HK-103X	CAPACITOR	0.01μF,50V
C2509	NBE20JM-106X	T CAPACITOR	10μF,6.3V
C2510	QEKJ1CM-476	E CAPACITOR	47μF,16V
C2511	NCB21HK-222X	CAPACITOR	0.0022μF,50V
C2512	NDC21HJ-331X	CAPACITOR	330pF,50V
C2513	NCB21HK-103X	CAPACITOR	0.01μF,50V
C2518	NCB21HK-102X	CAPACITOR	0.001μF,50V
C2519	NCB21HK-103X	CAPACITOR	0.01μF,50V
C2520	NCB21HK-103X	CAPACITOR	0.01μF,50V
C3002	NCB21HK-103X	CAPACITOR	0.01μF,50V
C3003	QEKJ1HM-106	E CAPACITOR	10μF,50V
C3004	NCB21EK-104X	CAPACITOR	0.1μF,25V
C3008	NCB21HK-103X	CAPACITOR	0.01μF,50V
C3011	QETL0JM-478	E CAPACITOR	4700μF,6.3V
C3012	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
C3013	NCB21HK-103X	CAPACITOR	0.01μF,50V
C3014	NBE20JM-226X	T CAPACITOR	22μF,6.3V
C3016	NCB21EK-104X	CAPACITOR	0.1μF,25V
C3019	NDC21HJ-101X	CAPACITOR	100pF,50V
C3020	NDC21HJ-101X	CAPACITOR	100pF,50V
C3021	NDC21HJ-101X	CAPACITOR	100pF,50V
C3022	NCB21EK-104X	CAPACITOR	0.1μF,25V
C3023	NBE20JM-106X	T CAPACITOR	10μF,6.3V
C3024	NDC21HJ-120X	CAPACITOR	12pF,50V
C3026	NCB21HK-103X	CAPACITOR	0.01μF,50V
C3027	NBE20JM-106X	T CAPACITOR	10μF,6.3V
C3028	NDC21HJ-101X	CAPACITOR	100pF,50V
C3029	NDC21HJ-101X	CAPACITOR	100pF,50V
C3030	NBE20JM-226X	T CAPACITOR	22μF,6.3V
C3031	NCB21HK-102X	CAPACITOR	0.001μF,50V
C3032	NCB21EK-104X	CAPACITOR	0.1μF,25V
C3033	NCB21EK-104X	CAPACITOR	0.1μF,25V
C3034	NDC21HJ-330X	CAPACITOR	33pF,50V
C3035	NDC21HJ-330X	CAPACITOR	33pF,50V
C3036	NDC21HJ-180X	CAPACITOR	18pF,50V
C3037	NDC21HJ-120X	CAPACITOR	12pF,50V
C3038	NDC21HJ-101X	CAPACITOR	100pF,50V

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C3039	NDC21HJ-101X	CAPACITOR	100pF,50V
	C3040	NCF21CZ-105X	CAPACITOR	1μF,16V
	C3041	NDC21HJ-100X	CAPACITOR	10pF,50V
	C3301	NBE20JM-226X	T CAPACITOR	22μF,6.3V
	C3302	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C3304	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C3501	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C3502	QEKJ1EM-335	E CAPACITOR	3.3μF,25V
	C3503	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C4001	NBE20JM-226X	T CAPACITOR	22μF,6.3V
	C4002	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C4003	NCB21HK-102X	CAPACITOR	0.001μF,50V
	C4004	NBE20JM-226X	T CAPACITOR	22μF,6.3V
	C4005	NCB21HK-222X	CAPACITOR	0.0022μF,50V
	C4006	NBE40JM-476X	T CAPACITOR	47μF,6.3V
	C4007	NCB21HK-561X	CAPACITOR	560pF,50V
	C4008	NCB21AK-105X	CAPACITOR	1μF,10V
	C4009	NCB21HK-563X	CAPACITOR	0.056μF,50V
	C4010	NCB21EK-223X	CAPACITOR	0.022μF,25V
	C4011	NCB21EK-104X	CAPACITOR	0.1μF,25V
	C4012	NCB21EK-224X	CAPACITOR	0.22μF,25V
	C4013	NCB21HK-563X	CAPACITOR	0.056μF,50V
	C4014	NDC21HJ-101X	CAPACITOR	100pF,50V
	C4015	NCB21HK-102X	CAPACITOR	0.001μF,50V
⚠	C5001	QFZ9051-683	F CAPACITOR	0.068μF,250V
⚠	C5004	QCZ9073-472	CAPACITOR	0.0047μF,125V
	C5006	QETM2DM-157	E CAPACITOR	150μF,200V
	C5101	QCZ0212-472	CAPACITOR	0.0047μF,1kV
	C5102	QCZ0302-330Z	CAPACITOR	33pF,1kV
	C5104	QETN1HM-105	E CAPACITOR	1μF,50V
	C5105	QFN31HJ-183	F CAPACITOR	0.018μF,50V
	C5107	QFV91HJ-104	F CAPACITOR	0.1μF,50V
	C5110	QCZ0302-330Z	CAPACITOR	33pF,1kV
	C5201	QEMU0JM-227	E CAPACITOR	220μF,6.3V
	C5202	QEMT1CM-827	E CAPACITOR	820μF,16V
	C5203	QEMT1AM-158	E CAPACITOR	1500μF,10V
	C5204	QETN2AM-475	E CAPACITOR	4.7μF,100V
	C5205	QETN1HM-106	E CAPACITOR	10μF,50V
	C5207	QETN1CM-227	E CAPACITOR	220μF,16V
	C5208	QETN1AM-227	E CAPACITOR	220μF,10V
	C5301	QEMU0JM-227	E CAPACITOR	220μF,6.3V
	C5302	QETN1HM-106	E CAPACITOR	10μF,50V
	C5303	QETN1CM-107	E CAPACITOR	100μF,16V
	C5304	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V
	C5305	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C5310	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C6007	QETN1CM-107	E CAPACITOR	100μF,16V
	C6024	NCB21HK-563X	CAPACITOR	0.056μF,50V
	C6037	QEKJ1HM-106	E CAPACITOR	10μF,50V
	C6052	NDC21HJ-101X	CAPACITOR	100pF,50V
	C6054	NDC21HJ-101X	CAPACITOR	100pF,50V
	C7202	QETN0JM-477	E CAPACITOR	470μF,6.3V
	C7505	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C7507	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C7511	QETN0JM-477	E CAPACITOR	470μF,6.3V
	C7525	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C7526	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C7528	QETJ0JM-477	E CAPACITOR	470μF,6.3V
	L1	QQL29BJ-100Z	COIL	10μH
	L2	QQL071J-330Y	COIL	33μH
	L4	QQL29BJ-100Z	COIL	10μH

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L7	QQL29BJ-100Z	COIL	10μH
	L8	QQL29BJ-680Z	COIL	68μH
	L9	QQL29BJ-100Z	COIL	10μH
	L13	QQL29BJ-100Z	COIL	10μH
	L16	QQL29BJ-100Z	COIL	10μH
	L17	QQLZ011-120Z	COIL	12μH
	L201	QQL29BJ-100Z	COIL	10μH
	L203	QQL37CJ-220Z	COIL	22μH
	L205	QQL071J-4R7Y	COIL	4.7μH
	L402	QQL231J-150Y	COIL	15μH
	L2001	QQL29BJ-100Z	COIL	10μH
	L2251	QQL29BJ-100Z	COIL	10μH
	L2501	QQL29BJ-2R2Z	COIL	2.2μH
	L5201	PELN1184	COIL	33μH
	L5202	PU60944-330K	COIL	33μH
	L5301	QQL29BJ-101Z	COIL	100μH
	L7201	QQL01BJ-101Z	COIL	100μH
	L7503	QQL29BJ-100Z	COIL	10μH
	LPF2501	PELN1137	LOW PASS FILTER	
	CF2501	QAX0399-001Z	RESONATOR	
	CF3301	PU60440-2	RESONATOR	
	LC2501	QQL29BJ-100Z	COIL	10μH
	X2	QAX0435-001	CRYSTAL RESONATOR	
	X3001	QAX0444-001	CRYSTAL RESONATOR	
	X3002	QAX0527-001	CRYSTAL RESONATOR	
	S3002	QSW0695-001	PUSH SWITCH,S.CASS SW	
	S6050	QSW0460-001	SLIDE SWITCH	
	K5101	QQR0678-001Z	FERRITE BEAD	
	PC3001	GP3S123	IC(PHOTO SENSOR)	
	PC3002	GP3S123	IC(PHOTO SENSOR)	
⚠	PC5101	PS2501-1	PH COUPLER	
	T2051	PELN0860	OSC TRANSFORMER	
	T2052	PELN0861	OSC TRANSFORMER	
⚠	T5001	QQS0030-001	SW TRANSFORMER	
	TU6001	QAU0113-002	TUNER	
⚠	TB1	LP30560-004B	TERMINAL BOARD ASSY	
	ET1	PQ21623-1-5	EARTH PLATE(RF)	
	HS1	LP40090-001A	HEAT SINK,Q5101	
	SD1	LP30563-001B	SHIELD CASE(PRE/REC)	
	OT1	QYTDSF3010Z	SCREW,X3 TERMINAL	
	OT2	QYTDSF2608M	SCREW,X2 S JACK	
	OT3	QYTDST3006Z	SCREW,Q5101	
	FC5001	QNG0006-001Z	FUSE CLIP,F5001	
	FC5002	QNG0006-001Z	FUSE CLIP,F5001	
	J3911	PU60612	MINI JACK,R.PAUSE	
	J7501	QNN0285-002	PIN JACK,REAR1 IN	
	J7503	QNN0286-002	PIN JACK,REAR1 OUT	
	J7505	QND0032-001	S JACK,SEPA IN	
	J7506	QND0032-001	S JACK,SEPA OUT	
⚠	LF5002	QQR0532-001	LINE FILTER	
⚠	SG5001	QAF0046-242Z	SURGE ABSORBER	
⚠	VA5001	QAF0023-431Z	VARISTOR	
⚠	VA5002	QAF0023-431Z	VARISTOR	
	CN1	QGF1028C1-13	FPC CONNECTOR,(1-13)U.DRUM	
	CN1901	QGF1207C1-11	FPC CONNECTOR,(1-11)GR	
	CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
	CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
	CN3001	QGF1208C1-05	FPC CONNECTOR,(1-5)DRUM MDA	
	CN3002	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR	
	CN3003	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR	
	CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER	
	CN3011	QGF1207C1-14	FPC CONNECTOR,(1-14)SW/DISPLAY	
	CN3012	QGF1207C1-06	FPC CONNECTOR,(1-6)JOG/SHUTTLE	
	CN3501	QGB2011L2-06	CONNECTOR,(1-6)DD MOTOR	
⚠	CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN	
	CN7504	QGF1207C1-05	FPC CONNECTOR,(1-5)FRONT	
⚠	CP4001	ICP-N15	CIRCUIT PROTECTOR	
⚠	CP5301	ICP-N38	CIRCUIT PROTECTOR	
⚠	CP5302	ICP-N25	CIRCUIT PROTECTOR	
⚠	F5001	QMF51N2-1R25J1	FUSE	1.25A,AC250V

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3D SVHS BOARD ASSEMBLY <05>

REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA10033-07A	3D SVHS BOARD ASSY
IC1001	JCP8008	IC
IC1002	VC2076MP-XE	IC
IC1003	MM1117XF	IC
IC1005	74HC4052D	IC
IC1401	JCP8010-2	IC(DIGITAL)
IC1402	MN47V77S-XE	IC
IC1403	MN47V77S-XE	IC
Q1003	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q1011	2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
Q1013	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q1016	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q1021	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q1022	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q1401	2SC1317/RS/-T	TRANSISTOR
Q1402	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q1403	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1404	2SC4081/S/-X	TRANSISTOR
Q1405	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1406	2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
Q1407	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q1408	2SA1576A/QR/-X	TRANSISTOR

REF No.	PART No.	PART NAME, DESCRIPTION	
	or 2PA1576/R/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
Q1409	2SA1576A/QR/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1410	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1411	2SA1576A/QR/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1412	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1413	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1414	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1416	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1417	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1418	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1419	DTA144WU	TRANSISTOR	
	or PDTA144WU	TRANSISTOR	
	or UN511E	TRANSISTOR	
D1007	1SS133	DIODE	
	or 1N4148M	DIODE	
D1401	RD4.3ES/B2/-T2	ZENER DIODE	
	or MTZJ4.3B	ZENER DIODE	
D1402	1SS133	DIODE	
	or 1N4148M	DIODE	
R1002	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R1003	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R1004	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R1007	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R1008	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R1009	NRSA02J-225X	MG RESISTOR	2.2MΩ,1/10W
R1010	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
R1011	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
R1012	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
R1013	NRVA02D-471X	CMF RESISTOR	470Ω,1/10W
R1014	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
R1015	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
R1016	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
R1017	NRSA02J-162X	MG RESISTOR	1.6kΩ,1/10W
R1018	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
R1019	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
R1020	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R1021	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R1022	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R1035	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R1038	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R1039	NRSA02J-394X	MG RESISTOR	390kΩ,1/10W
R1040	NRSA02J-101X	MG RESISTOR	100Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R1041	QRE123J-391X	RESISTOR	390Ω,1/2W
		R1042	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1043	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1050	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1051	QRE123J-391X	RESISTOR	390Ω,1/2W
		R1070	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R1071	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R1072	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1401	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R1402	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1403	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R1404	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R1405	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1406	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1407	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1408	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1409	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1410	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R1411	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R1412	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
		R1413	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1414	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1415	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R1416	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1417	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R1418	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R1419	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1420	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1422	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1423	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1425	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1426	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1427	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1428	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1429	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1430	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1431	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1432	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1433	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1434	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R1435	NRSA02J-242X	MG RESISTOR	2.4kΩ,1/10W
		R1436	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1437	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R1438	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1439	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1440	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1442	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1443	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1444	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1445	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R1446	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1447	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1448	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R1449	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
		R1451	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1452	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1454	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1455	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1456	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1457	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1458	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R1459	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1460	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
		R1461	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1462	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1463	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R1465	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1467	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1468	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R1470	NRSA02J-752X	MG RESISTOR	7.5kΩ,1/10W
		R1471	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R1472	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1473	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		VR1401	QVP0039-103Z	TRIM RESISTOR,DA Y LEVEL	
		C1001	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1002	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
		C1003	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1005	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1006	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1007	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1008	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1009	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1010	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1011	NDC21HJ-330X	CAPACITOR	33pF,50V
		C1013	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1014	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C1015	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1016	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C1019	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1020	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1021	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C1022	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1023	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C1024	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1026	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1027	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1028	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C1029	QEKJ1HM-104	E CAPACITOR	0.1μF,50V
		C1030	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1031	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C1032	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1033	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1034	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1035	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1036	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1037	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C1038	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C1039	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1040	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1041	NDC21HG-301X	CAPACITOR	300pF,50V
		C1042	NDC21HG-301X	CAPACITOR	300pF,50V
		C1043	NDC21HG-221X	CAPACITOR	220pF,50V
		C1044	NDC21HG-820X	CAPACITOR	82pF,50V
		C1045	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1046	NDC21HG-271X	CAPACITOR	270pF,50V
		C1047	NDC21HJ-101X	CAPACITOR	100pF,50V
		C1048	NDC21HJ-181X	CAPACITOR	180pF,50V
		C1049	NDC21HG-301X	CAPACITOR	300pF,50V
		C1050	NDC21HG-301X	CAPACITOR	300pF,50V
		C1051	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C1052	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1053	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1055	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1060	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1077	QEKJ1CM-107	E CAPACITOR	100μF,16V
		C1078	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1079	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		C1082	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1083	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1084	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1095	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1401	QEKJ1CM-336	E CAPACITOR	33μF,16V
		C1402	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1403	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1404	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1405	NDC21HJ-220X	CAPACITOR	22pF,50V
		C1406	NDC21HJ-6R0X	CAPACITOR	6pF,50V
		C1407	NDC21HJ-390X	CAPACITOR	39pF,50V
		C1408	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1409	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1410	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1411	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1412	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1413	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1414	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1415	NDC21HJ-221X	CAPACITOR	220pF,50V
		C1416	NDC21HJ-391X	CAPACITOR	390pF,50V
		C1417	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1418	NDC21HJ-8R0X	CAPACITOR	8pF,50V
		C1419	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1420	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1421	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1422	NDC21HJ-330X	CAPACITOR	33pF,50V
		C1424	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1425	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1426	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1427	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1428	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1429	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1430	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1431	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1432	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C1433	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1434	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1435	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1436	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1437	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1438	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1439	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1440	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1441	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1442	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1443	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1444	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C1445	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1446	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1447	NCB21HK-222X	CAPACITOR	0.0022μF,50V
		C1448	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1449	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1450	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1451	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1452	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1453	NCF21EZ-104X	CAPACITOR	0.1μF,25V

REF No.	PART No.	PART NAME, DESCRIPTION	
C1454	NDC21HJ-220X	CAPACITOR	22pF,50V
C1455	NDC21HJ-390X	CAPACITOR	39pF,50V
C1457	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1458	NCB21HK-103X	CAPACITOR	0.01µF,50V
C1459	NDC21HJ-470X	CAPACITOR	47pF,50V
C1460	NDC21HJ-470X	CAPACITOR	47pF,50V
C1461	NDC21HJ-470X	CAPACITOR	47pF,50V
C1463	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
C1465	NDC21HJ-470X	CAPACITOR	47pF,50V
C1468	NDC21HJ-470X	CAPACITOR	47pF,50V
C1471	NDC21HJ-470X	CAPACITOR	47pF,50V
C1472	NDC21HJ-470X	CAPACITOR	47pF,50V
C1473	NDC21HJ-470X	CAPACITOR	47pF,50V
C1474	NCB21HK-223X	CAPACITOR	0.022µF,50V
L1001	QQL29BJ-220Z	COIL	22µH
L1004	QQL071J-680Y	COIL	68µH
L1006	QQL29BJ-101Z	COIL	100µH
L1007	QQL29BJ-101Z	COIL	100µH
L1010	QQL29BJ-4R7Z	COIL	4.7µH
L1401	QQL071J-330Y	COIL	33µH
L1402	QQL29BJ-100Z	COIL	10µH
L1404	QQL071J-8R2Y	COIL	8.2µH
L1405	QQL071J-150Y	COIL	15µH
L1406	QQL071J-6R8Y	COIL	6.8µH
L1407	QQL29BJ-100Z	COIL	10µH
L1408	QQL29BJ-100Z	COIL	10µH
L1409	QQL071J-330Y	COIL	33µH
L1410	QQL29BJ-100Z	COIL	10µH
LC1401	QQR0657-013Z	NOISE FILTER	
LC1402	QQR0657-010Z	NOISE FILTER	
BK1	LP40077-001A	BRACKET(BOARD)	
CN1001	QGG2503K2-30	HEADER PIN	
CN1002	QGG2503K2-30	HEADER PIN	
CN1004	QGF1208F1-04	FPC CONNECTOR,(1-4)FRONT	

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AUDIO CONTROL HEAD BOARD ASSEMBLY <12>

PW1	LPA10010-01A1	A/C HEAD BOARD ASSY
CN1	QGF1208F1-07	FPC CONNECTOR

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DEMOD BOARD ASSEMBLY <14>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		PW1	PB11076A	DEMOD BOARD ASSY	
		IC1501	UPC1852AGT	IC	
			or UPC1854AGT	IC	
		R1501	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R1502	QRE141J-334Y	RESISTOR	330kΩ,1/4W
		R1503	QRE141J-124Y	RESISTOR	120kΩ,1/4W
		R1504	QRE141J-302Y	RESISTOR	3kΩ,1/4W
		R1505	QRE141J-512Y	RESISTOR	5.1kΩ,1/4W
		R1506	QRE141J-333Y	RESISTOR	33kΩ,1/4W
		R1507	QRE141J-333Y	RESISTOR	33kΩ,1/4W
		R1508	QRE141J-392Y	RESISTOR	3.9kΩ,1/4W
		R1509	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
		R1510	QRE141J-392Y	RESISTOR	3.9kΩ,1/4W
		R1511	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
		R1517	QRE141J-123Y	RESISTOR	12kΩ,1/4W
		C1501	QETC1CM-226	E CAPACITOR	22µF,16V
		C1502	QETC1HM-104	E CAPACITOR	0.1µF,50V
		C1503	QETC1HM-105	E CAPACITOR	1µF,50V
		C1504	QETC1HM-475	E CAPACITOR	4.7µF,50V
		C1505	QETC1HM-225	E CAPACITOR	2.2µF,50V
		C1506	QETC1HM-104	E CAPACITOR	0.1µF,50V
		C1507	QFV11HJ-473	F CAPACITOR	0.047µF,50V
		C1508	QETC1HM-474	E CAPACITOR	0.47µF,50V
		C1509	QETC1HM-104	E CAPACITOR	0.1µF,50V
		C1510	QETC1HM-105	E CAPACITOR	1µF,50V
		C1511	QETC1HM-105	E CAPACITOR	1µF,50V
		C1512	QETC1HM-105	E CAPACITOR	1µF,50V
		C1513	QEE81CJ-335	T CAPACITOR	3.3µF,16V
		C1514	QEE81CJ-106	T CAPACITOR	10µF,16V
		C1515	QETC1HM-105	E CAPACITOR	1µF,50V
		C1516	QETC1HM-106	E CAPACITOR	10µF,50V
		C1517	QETC1HM-106	E CAPACITOR	10µF,50V
		C1518	QETC1HM-105	E CAPACITOR	1µF,50V
		C1521	QETC1HM-106	E CAPACITOR	10µF,50V
		BK1	LP40077-001A	BRACKET(BOARD)	
		CN1501	QGG2502K1-09	HEADER PIN,(1-9)MAIN	

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MV/CM ADV BOARD ASSEMBLY <23>

PW1	LPA10013-04A	MV/CM ADV BOARD ASSY	
IC7401	AN3275SB	IC	
Q7401	2SD1819A/QRS/-X	TRANSISTOR	
	or 2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q7402	2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
	or 2SA1576A/QR/-X	TRANSISTOR	
Q7403	UN521E	TRANSISTOR	
	or PDTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or DTC144WU	TRANSISTOR	
Q7404	UN521E	TRANSISTOR	
	or PDTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or DTC144WU	TRANSISTOR	
Q7405	2SB1218A/QR/-X	TRANSISTOR	
	or 2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q7406	UN511E	TRANSISTOR	
	or RN2309	TRANSISTOR	
	or DTA144WU	TRANSISTOR	
	or PDTA144WU	TRANSISTOR	
R7404	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R7405	NRSA02J-823X	MG RESISTOR	82kΩ,1/10W
R7406	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R7408	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R7409	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R7410	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R7421	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R7422	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R7424	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R7425	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R7427	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R7428	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R7429	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
R7430	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R7431	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R7432	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R7433	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R7434	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R7435	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R7436	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R7437	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R7438	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R7439	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R7440	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R7441	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
C7401	QDYB1CM-103Y	CAPACITOR	0.01μF,16V
C7402	QETN1EM-476	E CAPACITOR	47μF,25V
C7403	QFN31HJ-272	F CAPACITOR	0.0027μF,50V
C7404	QEKC1HM-104	E CAPACITOR	0.1μF,50V
C7406	NCB21HK-222X	CAPACITOR	0.0022μF,50V
C7407	NCB21HK-103X	CAPACITOR	0.01μF,50V
C7408	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C7411	NCB21HK-103X	CAPACITOR	0.01μF,50V
C7414	QFV91HJ-104	F CAPACITOR	0.1μF,50V
C7415	QFV91HJ-224	F CAPACITOR	0.22μF,50V
C7416	NCB21HK-103X	CAPACITOR	0.01μF,50V
C7417	NCB21HK-103X	CAPACITOR	0.01μF,50V
C7418	NCB21HK-103X	CAPACITOR	0.01μF,50V
C7419	NCB21EK-104X	CAPACITOR	0.1μF,25V
C7420	NDC21HJ-390X	CAPACITOR	39pF,50V
C7421	QETN1HM-105	E CAPACITOR	1μF,50V
C7422	QEKC1HM-105	E CAPACITOR	1μF,50V
C7424	NCB21HK-102X	CAPACITOR	0.001μF,50V
C7426	QETN1HM-225	E CAPACITOR	2.2μF,50V
C7427	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C7430	NCB21HK-562X	CAPACITOR	0.0056μF,50V
C7431	NCB21HK-473X	CAPACITOR	0.047μF,50V
C7432	NCB21HK-223X	CAPACITOR	0.022μF,50V
L7401	QQL01BK-100Z	COIL	10μH
L7402	QQL231J-470Y	COIL	47μH
BK1	LP40077-001A	BRACKET(BOARD)	
CN7402	QGG2502K1-10	HEADER PIN	

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SW/DISPLAY BOARD ASSEMBLY <28>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW1	LPA10056-02A1	DISPLAY BOARD ASSY	
IC7001	M35500BGP	IC	
	or M35500BFP	IC	
	or M35500AGP	IC	
IC7002	PNA4652M00XB	IR DETECT UNIT	
	or GP1U281X	IR DETECT UNIT	
D7002	RD9.1ES/B2/-T2	ZENER DIODE	
	or UZ9.1BSB	ZENER DIODE	
	or MTZJ9.1B	ZENER DIODE	
D7004	1SS133	DIODE	
D7005	1SS133	DIODE	
D7006	1SS133	DIODE	
D7009	SLR-342MC3F	LE DIODE	
D7010	SLR-342VC3F	LE DIODE	
D7011	SLR-342MC3F	LE DIODE	
R7001	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7002	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7003	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7004	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7006	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7007	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7008	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7013	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7020	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7021	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R7022	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
R7023	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
R7024	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7025	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7026	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
R7027	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7028	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7030	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7031	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R7032	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
R7033	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
R7034	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7037	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7038	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7040	QRE141J-331Y	RESISTOR	330Ω,1/4W
R7041	QRE141J-331Y	RESISTOR	330Ω,1/4W
R7042	QRE141J-331Y	RESISTOR	330Ω,1/4W
C7001	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C7002	QETC1HM-106	E CAPACITOR	10μF,50V
C7007	QETN1HM-476	E CAPACITOR	47μF,50V
C7009	QCSB1HJ-150	CAPACITOR	15pF,50V
C7010	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C7011	QETN1AM-227	E CAPACITOR	220μF,10V
C7019	QDVB1EZ-223Y	CAPACITOR	0.022μF,25V
S7001	QSW0456-002Z	TACT SWITCH,POWER	
S7002	QSW0456-002Z	TACT SWITCH,CH+	
S7003	QSW0456-002Z	TACT SWITCH,CH-	
S7004	QSW0456-002Z	TACT SWITCH,REC	
S7005	QSW0456-002Z	TACT SWITCH,PAUSE	
S7006	QSW0456-002Z	TACT SWITCH,PLAY	
S7007	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
S7010	QSW0456-002Z	TACT SWITCH,TBC	
S7011	QSW0456-002Z	TACT SWITCH,REVIEW	
S7012	QSW0456-002Z	TACT SWITCH,S-ET	
S7013	QSW0456-002Z	TACT SWITCH,REC LINK	
S7014	QSW0456-002Z	TACT SWITCH,OK	
S7015	QSW0456-002Z	TACT SWITCH,MENU	
S7016	QSW0456-002Z	TACT SWITCH,INSERT	
S7017	QSW0456-002Z	TACT SWITCH,A.DUB	
DI7001	QLF0032-002	FL TUBE	

REF No.	PART No.	PART NAME, DESCRIPTION	
HD1	LP30428-001A	FDP HOLDER(L),DI7001	
HD2	LP30429-001A	FDP HOLDER(R),DI7001	
HD3	PQM30038-2-2	LED HOLDER,D7009	
HD4	PQM30038-1-2	LED HOLDER,D7010	
HD5	PQM30038-2-2	LED HOLDER,D7011	
CN7001	QGF1207C1-14	FPC CONNECTOR,(1-14)MAIN	

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REC SAFETY BOARD ASSEMBLY <32>

PW2	LPA10056-01A2	REC SAFETY BOARD ASSY	
S7041	QSW0602-003	PUSH SWITCH	
FW7001	QUM032-07A4A4	PARA RIBON WIRE	

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JACK BOARD ASSEMBLY <36>

PW4	LPA10056-01A4	JACK BOARD ASSY	
D7199	MTZJ6.2A	ZENER DIODE	
	or RD6.2ES/B1/-T2	ZENER DIODE	
R7191	QRE141J-750Y	RESISTOR	75Ω,1/4W
R7193	QRE141J-750Y	RESISTOR	75Ω,1/4W
R7194	QRE141J-820Y	RESISTOR	82Ω,1/4W
J7191	PEMC1126	PIN JACK,VIDEO IN	
J7192	PEMC0922	PIN JACK(SW),A(L)IN	
J7193	PEMC0922	PIN JACK(SW),A(R)IN	
J7194	QND0010-001	S JACK,S VIDEO	
CN7191	QGF1207F1-05	FPC CONNECTOR,(3-7)MAIN	
CN7192	QGF1207F1-04	FPC CONNECTOR,(1-4)S-SUB	

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JOG BOARD ASSEMBLY <37>

PW3	LPA10056-01A3	JOG BOARD ASSY	
UN7091	PEME0976	JOG ASSY	
CN7005	QGF1207F1-06	FPC CONNECTOR,(1-6)MAIN	

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LOADING MOTOR BOARD ASSEMBLY <55>

PW2	LPA10010-01A2	LOADING MOTOR BOARD ASSY	
C1	QFV61HJ-104Z	F CAPACITOR	0.1μF,50V
OT1	PU59915-105	#500SPACER0.01,C1	
CN1	QGB2533K1-02	CONNECTOR	

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

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JLIP BOARD ASSEMBLY <94>

PW3	LPA10048-06A3	JLIP BOARD ASSY	
J3951	PEMC1190	MINI JACK	
CN3951	QUM033-30Z4Z4	PARA RIBON WIRE	

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C.BOX/LANC BOARD ASSEMBLY <95>

PW2	LPA10048-06A2	C.BOX/LANC BOARD ASSY	
R7211	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
J7201	PU60612	MINI JACK,C.BOX	
CN7202	QUM032-30Z4Z4	PARA RIBON WIRE	

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GR BOARD ASSEMBLY <96>

PW1	LPA10041-02A	GR BOARD ASSY	
IC1901	M52661FP	IC	
IC1902	MB40C568	SOP IC	
IC1903	OR43101MQC	IC	
IC1904	S-80728AN-DR-X	IC	
	or S-80828ANUP-W	IC	
IC1905	S-80742AN-D6-X	IC	
	or S-80842ANUP-W	IC	
IC1906	L5431	IC	
IC1907	MM1115XF	SOP IC	
Q1901	2SC4081/QRS/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q1922	2SD2528/P/	TRANSISTOR	
Q1941	2SC4081/QRS/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q1942	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1943	2SA1576A/QR/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1944	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1945	2SA1576A/QR/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1946	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1947	2SA1576A/QR/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1948	2SC4081/QRS/-X	TRANSISTOR	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
			or 2PC4081/R/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
		Q1949	2SA1576A/QR/-X	TRANSISTOR	
			or 2SB1218A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		Q1950	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
			or 2SB1218A/QR/-X	TRANSISTOR	
		Q1951	2SC4081/QRS/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		Q1952	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
			or 2SB1218A/QR/-X	TRANSISTOR	
		Q1953	2SC4081/QRS/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		Q1954	2SC4081/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
		Q1955	2SA1576A/QR/-X	TRANSISTOR	
			or 2SB1218A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		D1901	DA204U	DIODE	
		D1923	11ES2	DIODE	
		D1924	11ES2	DIODE	
		D1941	DAP202U	DIODE	
		D1943	DA204U	DIODE	
		D1944	DAP202U	DIODE	
		R1901	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
		R1902	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1905	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1906	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1907	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R1908	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1909	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1910	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1911	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1912	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1931	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1932	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1934	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1937	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1938	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1939	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1940	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1941	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1942	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1943	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R1944	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1945	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1946	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1947	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1948	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R1949	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1950	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1951	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1952	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1953	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1954	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
		R1955	NRSA02J-221X	MG RESISTOR	220Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R1956	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1957	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1958	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R1959	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R1960	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1961	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1962	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1963	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1965	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R1966	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R1967	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1968	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1969	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R1970	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R1971	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1972	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1973	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1974	NRSA02F-4121X	MG RESISTOR	4.12kΩ,1/10W
		R1975	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1976	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1977	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R1978	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1979	NRSA02J-560X	MG RESISTOR	56Ω,1/10W
		R1980	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R1981	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1982	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1986	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1987	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1988	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1989	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R1990	NRVA02D-683X	CMF RESISTOR	68kΩ,1/10W
		R1991	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1992	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R1993	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R1994	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1995	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
		R1996	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
		R1997	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R1998	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		RA1901	NRZ0040-101X	NET RESISTOR	
		RA1902	NRZ0040-101X	NET RESISTOR	
		RA1931	NRZ0040-101X	NET RESISTOR	
		RA1932	NRZ0040-101X	NET RESISTOR	
		C1901	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1902	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1906	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1907	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1913	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C1919	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1920	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1921	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C1922	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1923	QEKJ1CM-476	E CAPACITOR	47μF,16V
		C1926	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1927	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
		C1928	QEKJ1CM-476	E CAPACITOR	47μF,16V
		C1930	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1932	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1933	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1934	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1935	NCB21HK-103X	CAPACITOR	0.01μF,50V

REF No.	PART No.	PART NAME, DESCRIPTION	
C1938	NDC21HJ-470X	CAPACITOR	47pF,50V
C1941	QEKJ1AM-107	E CAPACITOR	100μF,10V
C1942	NDC21HJ-220X	CAPACITOR	22pF,50V
C1943	NDC21HJ-5R0X	CAPACITOR	5pF,50V
C1944	NDC21HJ-390X	CAPACITOR	39pF,50V
C1945	QEKJ1CM-106	E CAPACITOR	10μF,16V
C1946	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1947	NDC21HJ-470X	CAPACITOR	47pF,50V
C1948	NDC21HJ-680X	CAPACITOR	68pF,50V
C1949	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1950	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1951	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1952	NCB21HK-681X	CAPACITOR	680pF,50V
C1953	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
C1954	NDC21HJ-220X	CAPACITOR	22pF,50V
C1955	NDC21HJ-5R0X	CAPACITOR	5pF,50V
C1956	NDC21HJ-390X	CAPACITOR	39pF,50V
C1957	QEKJ1CM-476	E CAPACITOR	47μF,16V
C1958	NCB21HK-102X	CAPACITOR	0.001μF,50V
C1959	NCB21CK-474X	CAPACITOR	0.47μF,16V
C1961	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1962	QEKJ1HM-105	E CAPACITOR	1μF,50V
C1963	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1964	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
C1965	NDC21HJ-220X	CAPACITOR	22pF,50V
C1966	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1967	NCB21EK-104X	CAPACITOR	0.1μF,25V
C1968	NCB21HK-102X	CAPACITOR	0.001μF,50V
C1969	NCB21HK-152X	CAPACITOR	0.0015μF,50V
C1970	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
C1971	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1972	NCB21EK-104X	CAPACITOR	0.1μF,25V
C1973	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1974	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1975	NDC21HJ-150X	CAPACITOR	15pF,50V
C1977	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1978	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1979	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
C1980	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1981	QEKJ1CM-106	E CAPACITOR	10μF,16V
C1982	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1983	QEKJ1AM-107	E CAPACITOR	100μF,10V
C1984	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1985	QEKJ1CM-106	E CAPACITOR	10μF,16V
C1986	QEKJ1CM-106	E CAPACITOR	10μF,16V
C1987	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1992	NCB21CK-474X	CAPACITOR	0.47μF,16V
C1993	QEKJ1CM-476	E CAPACITOR	47μF,16V
C1994	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
C1995	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1996	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1997	NDC21HJ-470X	CAPACITOR	47pF,50V
C1998	NDC21HJ-470X	CAPACITOR	47pF,50V
C1999	NDC21HJ-470X	CAPACITOR	47pF,50V
L1941	QQL29BJ-220Z	COIL	22μH
L1942	QQL29BJ-150Z	COIL	15μH
L1943	QQL29BJ-330Z	COIL	33μH
L1944	QQL29BJ-100Z	COIL	10μH
L1945	QQL29BJ-100Z	COIL	10μH
CF1941	QAX0492-001	RESONATOR	
LC1901	QQR0657-013Z	NOISE FILTER	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		X1941	QAX0012-001	CRYSTAL RESONATOR
		K1901	QQR0678-001Z	FERRITE BEAD
		K1931	QQR0678-001Z	FERRITE BEAD
		K1932	QQR0678-001Z	FERRITE BEAD
		SD1	LP30489-001A	SHIELD CASE(GR)
		SD2	LP30490-001A	SHIELD PLATE(GR)
		CN1902	QGF1207C1-11	FPC CONNECTOR,(1-11)